

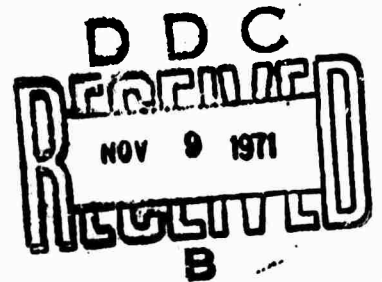
# **BIBLIOGRAPHY OF SOVIET LASER DEVELOPMENTS**

No. 4

APRIL-JUNE 1971

Approved for public release;  
distribution unlimited.

Sponsored by  
Advanced Research Projects Agency



Prepared by

Information 'Tisco, Inc.  
6811 Konilworth Avenue  
Riverdale, Maryland 20840

Reproduced by  
NATIONAL TECHNICAL  
INFORMATION SERVICE  
Springfield, Va. 22151

AD732244

**UNCLASSIFIED**

Security Classification

**DOCUMENT CONTROL DATA - R & D**

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Informatics Tisco, Inc. 6811 Kenilworth Avenue Riverdale, Maryland 20840		2a. REPORT SECURITY CLASSIFICATION Unclassified	
3. REPORT TITLE  Bibliography of Soviet Laser Developments, No. 4		2b. GROUP	
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Scientific.....Interim			
5. AUTHOR(S) (First name, middle initial, last name)  Stuart G. Hibben			
6. REPORT DATE August 1971		7a. TOTAL NO. OF PAGES 92	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO. F44620-70-C-0081		8b. ORIGINATOR'S REPORT NUMBER(S)	
b. PROJECT NO. AO 1622		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)  AFOSR - TR - 71 - 2814	
c. 62701 D			
d.			
10. DISTRIBUTION STATEMENT  Approved for public release; Distribution unlimited.			
11. SUPPLEMENTARY NOTES  Tech Other		12. SPONSORING MILITARY ACTIVITY Air Force Office of Scientific Research 1400 Wilson Boulevard (NPG) Arlington, Virginia 22209	

## 13. ABSTRACT

This report covers the second quarter of 1971 with the major yield of information coming from the approximately 30 periodicals known to report the most advanced and interesting findings in Soviet laser technology. This as well as the previous three reports covers the following topics: (1) laser research -- solid state, liquid, gas and chemical lasers; UV; components; nonlinear optics; spectroscopy of laser materials; short pulse generation; crystal growing; and general theory; (2) laser applications -- biological effects, communications, computer technology, holography, instrumentation, materials processing, and plasma generation.

**BIBLIOGRAPHY OF SOVIET  
LASER DEVELOPMENTS**

**No. 4, April - June 1971**

**Sponsored By**

**Advanced Research Projects Agency**

**ARPA Order No. 1622**

**August 27, 1971**

This research was supported by the Advanced Research Projects Agency of the Department of Defense and was monitored by the Air Force Office of Scientific Research under Contract No. F44620-70-C-0081. The publication of this report does not constitute approval by any government organization or Informatics Tisco, Inc. of the inferences, findings, and conclusions contained herein. It is published solely for the exchange and stimulation of ideas.

ARPA Order No. 1622  
Program Code No: OF10  
Name of Contractor:  
Informatics Tisco, Inc.  
Effective Date of Contract:  
January 1, 1971  
Contract Expiration Date:  
December 31, 1971  
Amount of Contract: \$215,672

Contract No.: F44620-70-C-0081  
Principal Investigator:  
Stuart G. Hibben  
Tel: (301) 779-2850  
Short Title of Work:  
"Soviet Lasers"

**Prepared By**

**Informatics Tisco, Inc.  
6811 Kenilworth Avenue  
Riverdale, Maryland 20840**

## Introduction

This bibliography has been compiled by the staff of Informatics Tisco, Inc. in response to a continuing contractual assignment to monitor current Soviet-bloc developments in the quantum electronics field. Of all material reviewed, the major yield has been from the approximately 30 periodicals which are known to report the most advanced and interesting findings in Soviet laser technology.

The period covered is the second quarter of 1971, and includes all significant laser-related articles received by us during that interval. The structure and selection criteria are basically those used in the preceding reports.

For convenience we generally have abbreviated source names; a source abbreviation list and an author index are included. Unless indicated by a parenthesized Reference Journal (RZh) notation, all cited sources are available at Informatics Tisco, Inc.

Acknowledgement is due to the consultant effort of Mr. Yuri Ksander (Rand Corporation) for assistance in selection and structure of the material.

## TABLE OF CONTENTS

INTRODUCTION	. . . . .	i
I. BASIC RESEARCH		
A. SOLID STATE LASERS		
1. Crystal		
a. Ruby	. . . . .	1
b. Fluorides	. . . . .	2
c. Tungstates	. . . . .	2
2. Semiconductor: Simple Junction		
a. GaAs	. . . . .	2
b. GaP	. . . . .	3
c. InSb	. . . . .	4
d. InSe	. . . . .	4
3. Semiconductor: Mixed Junction	. . . . .	4
4. Semiconductor: Heterojunction	. . . . .	4
5. Semiconductor: Theory	. . . . .	4
6. Glass	. . . . .	5
7. Solid State Laser Design	. . . . .	6
B. LIQUID LASERS		
1. Dyes		
a. Rhodamine	. . . . .	7
b. Polymethine	. . . . .	7
c. Phthalimide	. . . . .	7
d. Miscellaneous Organic Solutions	. . . . .	7
2. Chelates	. . . . .	8

3.	Acids . . . . .	8
4.	Xenon . . . . .	9
5.	Theory . . . . .	9
C. GAS LASERS		
1.	Simple Mixtures	
a.	He-Ne . . . . .	10
b.	He-Cd . . . . .	12
2.	Molecular Beam and Ion	
a.	CO <sub>2</sub> Mixtures . . . . .	12
b.	Nitrogen . . . . .	13
c.	Metal Vapor . . . . .	13
d.	Gasdynamic . . . . .	13
e.	Miscellaneous . . . . .	14
3.	Ring . . . . .	14
4.	General Theory . . . . .	15
D. CHEMICAL LASERS		
1.	H -F . . . . .	16
2.	DF-CO . . . . .	16
3.	Photodissociative . . . . .	16
4.	Laser-induced Chemical Reactions . . . . .	17
5.	Miscellaneous . . . . .	17
E.	UV . . . . .	18
F. COMPONENTS		
1.	Resonators . . . . .	19

a.	Design and Performance . . . . .	19
b.	Mode Kinetics . . . . .	19
2.	Q-Switches . . . . .	20
3.	Pumping Sources . . . . .	20
4.	Polarizers . . . . .	22
5.	Deflectors . . . . .	22
6.	Filters . . . . .	23
7.	Diffraction Elements . . . . .	24
8.	Mirrors . . . . .	24
9.	Scatterers, Attenuators . . . . .	25
10.	Detectors . . . . .	25
G.	NONLINEAR OPTICS	
1.	Frequency Conversion . . . . .	28
2.	Parametric Processes . . . . .	29
3.	Stimulated Scattering Effects	
a.	Raman . . . . .	29
b.	Brillouin . . . . .	30
4.	Self-Focusing . . . . .	30
5.	Beam Modulation . . . . .	30
6.	Acoustic Interaction . . . . .	32
7.	Birefringence . . . . .	34
8.	General Theory . . . . .	34

H.	SPECTROSCOPY OF LASER MATERIALS . . . . .	37
J.	SHORT PULSE GENERATION . . . . .	41
K.	CRYSTAL GROWING . . . . .	42
L.	GENERAL LASER THEORY . . . . .	43
II. LASER APPLICATIONS		
A.	BIOLOGICAL EFFECTS . . . . .	46
B.	COMMUNICATIONS	
1.	Beam Propagation in the Atmosphere . . . . .	47
2.	Beam Propagation in Liquids . . . . .	48
3.	Systems . . . . .	49
4.	Theory of Propagation . . . . .	51
C.	COMPUTER TECHNOLOGY . . . . .	54
D.	HOLOGRAPHY . . . . .	55
E.	INSTRUMENTATION AND MEASUREMENTS	
1.	Measurement of Laser Parameters . . . . .	59
2.	Miscellaneous Measurement Applications . . . . .	60
F.	MATERIALS PROCESSING	
1.	Nonlinear Surface Processing . . . . .	65
2.	Beam-Target Interactions	
a.	Metals . . . . .	65
b.	Dielectrics . . . . .	66
c.	Semiconductors . . . . .	67
d.	Miscellaneous Studies . . . . .	69
G.	PLASMA GENERATION . . . . .	71



III.	MONOGRAPHS . . . . .	73
IV.	SOURCE ABBREVIATIONS . . . . .	74
V.	AUTHOR INDEX . . . . .	77

## I. BASIC RESEARCH

### A. SOLID STATE LASERS

#### 1. Crystal

##### a. Ruby

1. Bokhonov, A. F., V. S. Burakov, V. A. Rybakov, and A. M. Samson. Regular nonattenuated pulsed power modes in a laser with bleachable filters. ZhPS, v. 14, no. 6, 1971, 994-999.
2. Bondarenko, M. D., A. V. Ghatovskiy, and M. S. Soskin. Radiation divergence in solid-state lasers. UFZh, no. 4, 1971, 529-538.
3. Ivanov, V. D., and A. M. Leontovich. Spatial coherence of emission from a ruby laser with pulsed Q-switching. IN: Kvantovaya elektronika. Sbornik statey. No. 1, Moskva, Sovetskoye radio, 1971, 96-101.
4. Klinkov, V. K. Generation in a ruby laser in a magnetic field. DAN SSSR, v. 198, no. 3, 1971, 565-567.
5. Mikaelyan, A. L., Ye. B. Anikina, V. P. Minayev, and Yu. G. Turkov. Single-mode ruby laser with a ring resonator. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971. 136-139.
6. Mikaelyan, A. L., V. F. Kuprishov, Yu. G. Turkov, Yu. V. Andreyev, and A. A. Shcherbakova. Study of ruby laser generation with self-Q switching. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 102-109.
7. Popovichev, V. I., V. V. Ragul'skiy, and F. S. Fayzullov. Production of one megawatt pulses from a free-running ruby laser. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 135-136.

8. Sharlay, S. F., and L. P. Priyateleva. Study of generation in ruby with Q-switching by CdS glass. IN: Leningradskiy institut tochnoy mekhaniki i optiki. Trudy. No. 67, 1970, 123-127. (RZhF, 4/71, #4D975).
- b. Fluorides
9. Antonov, Ye. V., I. N. Guseva, and Yu. A. Rakhshadt. Distribution of impurities in lanthanum fluoride crystals, investigated by an optical scattering method. Kristall, no. 3, 1971, 548-552.
10. Bagdasarov, Kh. S., G. A. Bogomolova, A. A. Kaminskiy, A. M. Prokhorov, and T. M. Prokhortseva. Laser and spectroscopic properties of  $Gd_2(MoO_4)_3:Nd^{3+}$  crystal. DAN SSSR, v. 197, no. 3, 1971, 557-559.
11. Kaminskiy, A. A. Energy transition diagrams for activated-crystal lasers. NM, no. 5, 1971, 904-907.
12. Voron'ko, Yu. K., M. V. Dmitruk, V. V. Osiko, and I. A. Shcherbakov. Equilibrium of dopant defects in  $CaF_2:Yb^{3+}$  crystals. FTT, no. 6, 1971, 1611-1616.
- c. Tungstates
13. Bel'skiy, N. K., and D. A. Mukhamedova. Experimental determination of inverted population in  $CaWO_4:Nd^{3+}$  crystal. DAN SSSR, v. 198, no. 6, 1971, 1303-1305.

## 2. Semiconductor: Simple Junction

- a. GaAs
14. Bykovskiy, Yu. A., V. L. Velichanskiy, I. G. Goncharov, V. A. Maslov, and V. V. Nikitin. Using a Fabry-Perot resonator to study thermal modes and spectral characteristics of a semiconductor laser. FTP, no. 3, 1971, 498-501.

15. Bykovskiy, Yu. A., V. L. Velichanskiy, V. A. Maslov, and V. L. Smirnov. Study of spectral kinetics of a semiconductor laser with nonuniform injection. FTP, no. 5, 1971, 939-942.
16. Bykovskiy, Yu. A., V. L. Velichanskiy, I. G. Goncharov, V. A. Maslov, and A. F. Uzkiy. Spectral characteristics of a semiconductor laser with nonuniform electron beam pumping. FTP, no. 5, 1971, 1005-1007.
17. Deryagin, V. N., and L. Ye. Marasin. Study of the distribution in starting times of pulsed generation at the active surface of uncooled GaAs lasers. OMP, no. 5, 1971, 12-14.
18. Galkin, G. N., F. F. Kharakhorin, and Ye. V. Shatkovskiy. Recombination of nonequilibrium carriers in GaAs at high pumping levels. FTP, no. 3, 1971, 442-448.
19. Gribkovskiy, V. P., V. K. Kononenko, and V. A. Samoylyukovich. Internal parameters of injection lasers. PSS (a), no. 2, 1970, 353-363. (RZhF, 5/71, #5D893).
20. Kurbatov, L. N., G. S. Kozina, T. A. Kostinskaya, V. N. Favorin, and V. I. Bogatyrev. Electron beam-pumped scanning laser. RiE, no. 4, 1971, 637-639.
21. Kurbatov, L. N., S. S. Shakhidzhanov, L. V. Bystrova, Yu. P. Demidov, A. G. Katayev, and A. A. Kiselev. Study of a GaAs multibeam injection laser amplifier. RiE, no. 4, 1971, 639-640.
22. Voronin, V. F., V. P. Gribkovskiy, and V. A. Samoylyukovich. Correlation between the internal differential quantum yield and the near field pattern of injection lasers. ZhPS, v. 14, no. 3, 1971, 531-533.
- b. GaP
23. Ignatkina, R. S., B. A. Krasnyuk, N. Ye. Kurgayeva, S. S. Meskin, N. F. Nedel'skiy, V. N. Ravich, and B. V. Tsarenkov. Epitaxial sources of green light from GaP. FTP, no. 4, 1971, 626-630.

c. InSb

24. Kobyzhev, V. N., and A. S. Tager. Coherent SHF emission from n-InSb. ZhETF P, v. 13, no. 11, 1971, 607-611.

d. InSe

25. Kurbatov, L. N., A. I. Dirochka, A. D. Britov, A. N. Vlasov, N. N. Mochalkin, and N. V. Sorokovitskiy. Stimulated emission from electron beam-pumped InSe. FTP, no. 3, 1971, 563-565.

3. Semiconductor: Mixed Junction

26. Baroyev, T. R., P. G. Yelisseyev, and N. V. Siukayev. Electroluminescence of p-n junctions in  $\text{In}_{1-x}\text{Ga}_x\text{P}$ . FTP, no. 3, 1971, 547-548.
27. Brodin, M. S., K. A. Dmitrenko, and V. Ya. Reznichenko. Two-photon absorption of mixed-junction  $\text{CdS}_x\text{Se}_{1-x}$  crystals at a ruby laser frequency. FTT, no. 6, 1971, 1584-1589.

4. Semiconductor: Heterojunction

28. Alfeyorov, Zh. I., V. M. Andreyev, V. I. Borodulin, D. Z. Garbuzov, Ye. P. Morozov, G. T. Pak, A. I. Petrov, Ye. L. Portnoy, N. P. Chernousov, V. I. Shveykin, and I. V. Yashumov. Effective generation of coherent emission in injection heterolasers. FTP, no. 5, 1971, 972-973.
29. Dolginov, L. M., L. V. Druzhinina, P. G. Yelisseyev, I. V. Krasavin, and L. D. Libov. C-w generation in semiconductor lasers at room temperature. KSpF, no. 2, 1971, 57-63.

5. Semiconductor: Theory

30. Akerman, D., P. G. Yelisseyev, A. Kayper, M. A. Man'ko, and Z. Raab. Selection methods for oscillatory modes in injection lasers. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 85-90.

31. Aleksandrov, A. S., and V. F. Yelesin. Recombination radiation spectra of a semiconductor in a strong e-m field. FTP, no. 4, 1971, 615-619.
32. D'yakonov, M. I., and V. I. Perel'. Spin orientation of electrons in interband absorption of light in semiconductors. ZhETF, v. 60, no. 5, 1971, 1954-1965.
33. Gribkovskiy, V. P., and G. I. Moiseyenko. A possible mechanism for generation in semiconductor thin films. ZhPS, v. 14, no. 4, 1971, 713-716.
34. Mayev, R. G., I. A. Poluektov, and V. I. Pustovoyt. Possibility of generation and amplification of light in photosemiconductors. FTT, no. 4, 1971, 1101-1104.
35. Sugakov, V. I. Light absorption by free carriers in semiconductors with point defects. FTP, no. 5, 1971, 984-986.
36. Yelesin, V. F. Theory of semiconductor lasers. OiS, v. 30, no. 3, 1971, 569-570.
37. Yelisseyev, P. G., and Ye. G. Sukhov. Analysis of conditions for c-w generation from a semiconductor laser at room temperature. RiE, no. 6, 1971, 1005-1009.

## 6. Glass

38. Bubnov, M. M., I. M. Buzhinskiy, Ye. M. Dianov, and A. M. Prokhorov. Measuring thermal distortion in rectangular neodymium glass rods. KSpF, no. 3, 1971, 7-12.
39. Mak, A. A., L. N. Soms, A. I. Stepanov, and A. B. Sudakov. Effect of induced anisotropy of the active element on operation of a neodymium glass laser. OiS, v. 30, no. 6, 1971, 1081-1087.
40. Malyshev, V. I., A. A. Sychev, and V. A. Babenko. Study of laser emission characteristics in neodymium glass with a passive Q-switch having finite relaxation time. ZhETF P, v. 13, no. 11, 1971, 588-592.

## 7. Solid State Laser Design

41. Anan'yev Yu. A. Angular dispersion of emission from solid state lasers. UFN, v. 103, no. 4, 1971, 705-738.
42. Anan'yev, Yu. A., V. Ye. Sherstobitov, and O. A. Shorokhov. Calculating the effectiveness of a laser with large emission losses. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 91-95.
43. Anan'yev, Yu. A., N. A. Svetsitskaya, and V. Ye. Sherstobitov. Laser. Author's Certificate USSR, No. 274254, published Sept. 18, 1970. (RZhF, 6/71, #7D949P).
44. Kaminskiy, A. A., and D. N. Vylegzhanin. Study of electron-phonon processes in crystal:  $\text{Nd}^{3+}$  systems. DAN SSSR, v. 195, no. 4, 1970, 827-830.
45. Sharlay, S. F. Features of multimode generation in lasers with passive Q-switching. IN: Leningradskiy institut tochnoy mekhaniki i optiki. Trudy. No. 67, 1970. 62-66. (RZhF, 4/71, #4D953).

## B. LIQUID LASERS

### 1. Dyes

#### a. Rhodamine

- 46. Bushuk, B. A. Rhodamine 6G laser with double-pulse pumping. IN: Sb 1, 63-65. (RZhF, 5/71, #5D847).
- 47. Kechkemeti, I., L. Kozma, I. Salma, B. Rats, and E. Khun. Feasibility study on tuning liquid lasers by varying their concentration. ZhPS, v. 14, no. 6, 1971, 1000-1003.
- 48. Neporent, B. S., and V. B. Shilov. Shifts of generation spectra in dye solutions during laser pumping. OiS, v. 30, no. 6, 1971, 1074-1080.
- 49. Strizhnev, V. S. Effect of flashlamp discharge mode on emission characteristics of an alcohol solution of rhodamine 6G. IN: Sb 1, 75-76. (RZhF, 5/71, #5D848).

#### b. Polymethine

- 50. Loyko, M. M. Energy and angular characteristics of emission from polymethine dyes under conditions of a dynamically varying active medium. IN: Sb 1, 71-72. (RZhF, 5/71, #5D851).

#### c. Phthalimide

- 51. Das'ko, A. D. Generation in phthalimides under flash-lamp pumping. IN: Sb 1, 66-68. (RZhF, 5/71, #5D850).

#### d. Miscellaneous Organic Solutions

- 52. Bonch-Bruyevich, A. M., T. K. Razumova, G. M. Rubanova, V. A. Khodovoy, and V. V. Khromov. Observing stimulated fluorescence in dye solutions under free-running, single-pulse and quasi-cw ruby laser pumping. OiS, v. 30, no. 3, 1971, 573-575.



53. Kalosha, I. I. Generation in solutions of complex organic compounds. IN: Sb 1, 68. (RZhF, 5/71, #5D854).
54. Kalosha, I. I., and V. A. Tolkachev. Some complex-molecule lasing solutions and their properties. ZhPS, v. 14, no. 3, 1971, 537-539.
55. Kortenski, T., S. Ivanov, D. Vulchev, and M. Miteva. Conditions for producing a liquid organic laser from the hydrocarbon components of a distilled fraction of Bulgarian Dolni Dubnik oil. Doklady Bolgarskoy akademii nauk, v. 24, no. 4, 1971, 439-443.
56. Paltarak, N. M. Generation in organic dye solutions in the 360-500 nm range. IN: Sb 1, 73-74. (RZhF, 5/71, #5D852).
57. Shvedova, N. D., and L. M. Sverdlov. Study of the effect of dye type on stimulated Raman spectra in various liquids. Ois, v. 30, no. 3, 1971, 571-573.
58. Stepanov, B. I., and V. A. Batyrev. Energy balance in organic-compound lasers using nonmonochromatic pumping. ZhPS, v. 14, no. 4, 1971, 619-629.
59. Voropay, Ye. S., and A. M. Sarzhevskiy. Fluorescence in anthracene excited by a ruby laser. DAN BSSR, no. 5, 1971, 398-400.

## 2. Chelates

60. Puks, R. A., and T. M. Kozhan. Luminescence of rare earth chelates under ruby laser pumping. IN: Sb 1, 35-37. (RZhF, 5/71, #5D673).

## 3. Acids

61. Gayevoy, G. M., M. Ye. Zhabotinskiy, S. L. Krayevskiy, Yu. P. Rudnitskiy, and G. V. Ellert. Energy transfer among luminescence centers of uranyl in polyphosphoric acid. NM, no. 1, 1971, 82-85.

62. Malyshev, B. N., N. P. Karnaukh, N. A. Paramonova, and B. N. Kulikovskiy. Space-energy characteristics of a circulating liquid laser based on  $\text{POCl}_3\text{-SnCl}_4\text{:Nd}$ . IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 139-140.

#### 4. Xenon

63. Basov, N. G., V. A. Danilychev, and Yu. M. Popov. Stimulated emission in the vacuum ultraviolet region. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 29-34.

#### 5. Theory

64. Stepanov, B. I., and L. P. Kazachenko. Universal relationship between absorption and emission spectra, as a function of solvent effect. ZhPS, v. 14, no. 5, 1971, 819-825.

## C. GAS LASERS

### 1. Simple Mixtures

#### a. He-Ne

65. Aleksandrov, V. I., A. E. Fotiadi, and S. A. Fridrikhov. Energy distribution of electrons in a He-Ne laser plasma. IN: Leningradskiy politekhnicheskii institut. Trudy, no. 311, 1970, 181-185.
66. Arkhipov, V. K., Ye. I. Yershov, Ye. I. Panov, E. L. Ryzhakova, and R. P. Tarasov. Generating optical pulses of particular waveforms with a gas laser. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskii sbornik. Gazorazryadnyye pribory. No. 3 (19), 1970, 33-36. (RZhF, 4/71, #4D1022).
67. Belousova, I. M., O. B. Danilov, and A. F. Zapryagayev. Emission spectrum study of an amplitude-modulated He-Ne laser using an inverse signal with Doppler frequency shift. ZhTF, no. 5, 1971, 1028-1033.
68. Beterov, I. M., V. N. Lisitsyn, and V. P. Chebotayev. Saturation phenomena and mode selection in He-Ne lasers. I. OiS, v. 30, no. 5, 1971, 932-939.
69. Beterov, I. M., V. N. Lisitsyn, and V. P. Chebotayev. Saturation phenomena and mode selection in He-Ne lasers. II. OiS, v. 30, no. 6, 1971, 1108-1117.
70. Deryugin, I. A., and A. T. Mirzayev. Time distribution of photons in laser emission. UFZh, no. 5, 1971, 858-860.
71. Deryugin, I. A., Ye. V. Zykova, and Ye. T. Kucherenko. Study of the effect of a variable magnetic field on the plasma parameters and emission from a gas laser. ZhPS, v. 14, no. 5, 1971, 922-925.
72. Godzinski, Z., A. Mroz, and H. Paszkowska. Optical and electrical parameters of He-Ne red lasers. Prace przemyslowego instytutu elektroniki, no. 2, 1970, 95-106.

73. Goncharuk, I. N., V. Yu. Davydov, I. T. Savatinova, and E. V. Chisler. He-Ne laser with a mercury cathode. PTE, no. 3, 1971, 182-183.
74. Gruzinskiy, V. V., and L. K. Stratskevich. Effect of an axial magnetic field on power generated by a He-Ne laser. ZhPS, v. 14, no. 5, 1971, 804-808.
75. Kukushkin, V. A., T. M. Perchanok, and S. A. Fridrikhov. Pulse generation in a He-Ne laser at 6328 Å. IN: Leningradskiy politekhnicheskii institut. Trudy, no. 311, 1970, 186-190.
76. Magdich, L. N., and A. M. Moyya. Pulsed He-Ne laser. PTE, no. 2, 1971, 276-277.
77. Mazan'ko, I. P., M. I. Molchanov, N. -D. D. Ogurok, and M. V. Sviridov. Measurement of gain distribution in cells of He-Ne lasers. OiS, v. 30, no. 5, 1971, 927-931.
78. Mukhamedgaliyeva, A. F., V. M. Tatarenkov, A. N. Titov, and A. V. Uspenskiy. Study of the  $3s_2 - 3p_4$  laser transition in a  $Ne^{20}$  atom. OiS, v. 30, no. 5, 1971, 798-802.
79. Pacheva, J., N. Sabotinov, and G. Georgiev. Study of the sidelight emission spectrum of a He-Ne laser. Doklady Bolgarskoy akademii nauk, v. 24, no. 1, 1971, 7-10.
80. Solov'yeva, G. I. Power saturation in a pulsed He-Ne laser. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskii sbornik. Gazorazryadnyye pribory. No. 4(20), 1970. 8-15. (RZhF, 6/71, #6D984).
81. Stratskevich, L. K. Effect of an axial magnetic field on the power generated by a He-Ne laser. IN: Sb 1, 87-89. (RZhF, 5/71, #5D872).
82. Tatarenkov, V. M., and A. N. Titov. Effect of neon-neon collisions on characteristics of the  $3s_2 - 3p_4$  laser transition of a  $Ne^{20}$  atom. OiS, v. 30, no. 5, 1971, 803-806.

83. Terekhin, D. K., and S. A. Fridrikhov. Transverse Zeeman effect in a helium-neon laser. IN: Leningradskiy politekhnicheskiy institut. Trudy, no. 311, 1970, 191-197.
84. Vinogradov, V. I., and A. V. Yeletskiy. Drift of excited atoms in a direct current discharge in neon. OiS, v. 30, no. 5, 1971, 830-835.
85. Voytovich, A. P. Laser. Author's Certificate, USSR. No. 258481, published April 17, 1970. (RZhF, 5/71, #5D874P).
86. Voytovich, A. P., N. I. Kabayev, A. Ya. Smirnov, and A. P. Shkadarevich. Study of frequency selection in an He-Ne laser with a neon absorption cell inside the resonator. OiS, v. 30, no. 5, 1971, 940-946.
- b. He-Cd
87. Zaytsev, V. P., and L. M. Sabirov.  $\text{He}^{+114}$  Cd laser for exciting optical scattering spectra. PTE, no. 3, 1971, 189-190.

## 2. Molecular Beam and Ion

- a. CO<sub>2</sub> Mixtures
88. Barchukov, A. I., and Yu. B. Konev. Amplitude-phase distortions in a CO<sub>2</sub> power amplifier with periodic correction. RiE, no. 4, 1971, 549-553.
89. Barchukov, A. I., Yu. B. Konev, and A. M. Prokhorov. Use of quasi-optic lines for developing high power single-mode CO<sub>2</sub> lasers. DAN SSSR, v. 198, no. 1, 1971, 74-75.
90. Letokhov, V. S., and B. D. Pavlik. Gas laser with nonlinear absorption in a quasi-traveling wave mode. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 53-63.

91. Novgorodov, M. Z., A. G. Sviridov, and N. N. Sobolev. Concentration and impact frequency of electrons in flow discharges of a CO<sub>2</sub> laser. ZhTF, no. 4, 1971, 752-759.

92. Vinevich, B. S. Measuring focal distance of a gas lens in the active medium of a CO<sub>2</sub> laser. OiS, v. 30, no. 6, 1971, 1146-1147.

93. Yeletskiy, A. V., and B. M. Smirnov. Statistical model of vibrational relaxation in CO<sub>2</sub> molecules. TVT, no. 1, 1971, 193-194.

b. Nitrogen

94. Kaslin, V. M., I. N. Knyazev, and G. G. Petrash. Superradiance in infrared transitions of molecular nitrogen. KSpF, no. 1, 1971, 51-57.

95. Tunitskiy, L. N., and Ye. M. Cherkasov. Study of interaction among emission lines in various bands of the first positive system of N<sub>2</sub> (1+). ZhPS, v. 14, no. 6, 1971, 1106-1109.

96. Tunitskiy, L. N., and Ye. M. Cherkasov. Study of pulsed emission in bands of the first positive system of N<sub>2</sub> (1+). ZhPS, v. 14, no. 6, 1971, 1004-1011.

c. Metal Vapor

97. Korolev, F. A., S. A. Bakhramov, and V. I. Odintsov. Four-photon parametric processes in rubidium vapors. OiS, v. 30, no. 4, 1971, 788-789.

98. Sem, M. F., V. F. Keydan, and V. S. Mikhalevskiy. Generating c-w coherent emission from ion transitions in substances introduced into the discharge region by cataphoresis. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Elektronika SVCh. No. 1, 1971, 69-76. (RZhF, 5/71, #5D862).

d. Gasdynamic

99. Brunne, M., G. Malaczynski, J. Milewski, and J. Stanko. Two-fluid model of the optically active medium in gas-dynamic lasers. Bulletin de l'Academie Polonaise des Sciences. Serie des Sciences Techniques, no. 3, 1971, 17-24.

100. Gol'dfarb, V. M. Obtaining population inversion of atomic levels in hypersonic plasma jets. ZhPS, v. 14, no. 5, 1971, 801-803.
102. Markova, S. V., and G. G. Petrash. Forming an inverted population by mixing a cold and a hot gas. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Gazorazryadnyye pribory. No. 3(19), 1970, 105-106. (RZhF, 5/71, #5D887).
- e. Miscellaneous
103. Kabashnikov, V. P. Nonstationary behavior of molecules having two vibrational levels in a powerful radiation field. ZhPS, v. 14, no. 5, 1971, 815-818.
104. Klejman, H. Ion and molecular gas lasers. Elektronika, no. 3, 1970, 112-117. (RZhF, 4/71, #4D1006).
105. Sobolev, N. N., and V. V. Sokovikov. Vibrational relaxation in molecular gas lasers. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Gazorazryadnyye pribory. No. 4(20), 1970, 3-7. (RZhF, 6/71, #6D975).
106. Svich, V. A., and S. F. Dyubko. Measuring laser amplifier gain at the 311 and 337 micron wavelengths. ZhTF, no. 5, 1971, 1034-1036.
107. Tunitskiy, L. N., and Ye. M. Cherkasov. Generation mechanism in pulsed lasers based on electron transitions. ZhPS, v. 14, no. 4, 1971, 630-637.
108. Wolinski, W. Developments in the field of high-power gas lasers in Poland. Elektronika, no. 4, 1970, 143-148. (RZhF, 5/71, #5D858).

### 3. Ring

109. Andronova, I. A., and I. L. Bershteyn. Experimental investigation of feedback effect upon ring laser operation. IVUZ Radiofiz, no. 5, 1971, 698-705.

110. Basov, N. G., E. M. Belenov, M. V. Danileyko, and V. V. Nikitin. Resonance power and stabilization of frequency in a gas laser with nonlinear absorption cell. IN: Kvantovaya elektronika. Sbornik statey. No. 1, Moskva, Sovetskoye radio, 1971, 42-52.
111. Dubovets, V. G., and A. P. Prishivalko. Emission polarization and losses in triangular and rectangular ring lasers with two discharge tubes. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Gazorazryadnyye pribory. No. 3(19), 1970, 16-24. (RZhF, 4/71, #4D598).
112. Kutsak, A. A. Dual mode generation in a ring laser. IN: Sb 1, 80-82. (RZhF, 6/71, #6D938).
113. Volkov, A. M., A. A. Izmet'shev, and G. V. Skrotskiy. Rotating ring laser in an arbitrary gravitational field. OiS, v. 30, no. 4, 1971, 762-766.

#### 4. General Theory

114. Bykovskiy, V. F., and A. V. Gorelik. Gas laser. Otkr izobr, no. 4, 1971, no. 286819, 187.
115. Fradkin, E. Ye., and L. M. Khayutin. Effect of radiation trapping on mode competition in a gas laser. OiS, v. 30, no. 5, 1971, 978-979.
116. Sokolovskiy, R. I. Nonequilibrium velocity distribution of atoms in a strong monochromatic field and the Stark effect. OiS, v. 30, no. 4, 1971, 592-596.
117. Stepanov, B. I., and V. V. Churakov. Effect of rotational relaxation on gain. ZhPS, v. 14, no. 6, 1971, 990-993.



## D. CHEMICAL LASERS

### 1. $H_2-F_2$

118. Dodonov, A. F., G. K. Lavrovskaya, I. I. Morozov, and V. L. Tal'roze. Mass spectrometer measurement of the reaction rate in the elementary reaction of fluorine atoms with hydrogen. DAN SSSR, v. 198, no. 3, 1971, 622-625.
119. Kapralova, G. A., Ye. M. Margolina, and A. M. Chaykin. Rate constants in certain reactions of vibrationally excited  $H_2$  molecules in the hydrogen-fluorine reaction. DAN SSSR, v. 197, no. 3, 1971, 624-626.
120. Kapralova, G. A., Ye. M. Margolina, and A. M. Chaykin. Mechanism of the reaction of fluorine with hydrogen. DAN SSSR, v. 198, no. 3, 1971, 634-637.
121. Leypunskiy, I. O., I. I. Morozov, and V. L. Tal'roze. Mass spectrometer measurement of the reaction rate constants of hydrogen and fluorine atoms with methyl iodide and trifluoriodomethane. DAN SSSR, v. 198, no. 6, 1971, 1367-1370.

### 2. $DF-CO_2$

122. Basov, N. G., V. V. Gromov, Ye. L. Koshelev, Ye. P. Markin, A. N. Orayevskiy, D. S. Shapovalov, and V. A. Shcheglov. A c-w chemical laser based on  $DF-CO_2$ . ZhETF P, v. 13, no. 9, 1971, 496-498.

### 3. Photodissociative

123. Afanas'yev, Yu. V., E. M. Belenov, Ye. P. Markin, and I. A. Poluektov. Nonequilibrium dissociation of a molecular gas under resonant laser radiation, with vibration-vibration collisions taken into account. ZhETF P, v. 13, no. 8, 1971, 462-464.
124. Andreyeva, T. L., S. V. Kuznetsova, A. I. Maslov, I. I. Sobel'man, and V. N. Sorokin. Studies of excited iodine atom reactions by means of a photodissociation laser. ZhETF P, v. 13, no. 11, 1971, 631-635.

125. Dudkin, V. A., and V. I. Malyshev. Time characteristics of emission from a Q-switched iodine laser. KSpF, no. 3, 1971, 35-40.
126. Onoshko, R. N. Kinetics of generation in photodissociative lasers. IN: Sb 1, 85-86. (RZhF, 6/71, #6D1005).
127. Skorobogatov, G. A. Formal kinetics of reactions taking place in photodissociative gas lasers. VLU, no. 4. Fizika, khimiya, no. 1, 1970, 144-157.

#### 4. Laser-induced Chemical Reactions

128. Basov, N. G., Ye. P. Markin, A. N. Orayevskiy, and A. V. Pankratov. Photochemical action of infrared radiation. DAN SSSR, v. 198, no. 5, 1971, 1043-1045.

#### 5. Miscellaneous

129. Basov, N. G., V. I. Igoshin, Ye. P. Markin, and A. N. Orayevskiy. Dynamics of chemical lasers (Review). IN: Kvantovaya elektronika. Sbornik statey. No. 2. Moskva, Sovetskoye radio, 1971, 3-24.
130. Makeyev, V. I., and A. N. Baratov. Kinetics of high-temperature oxidation of hydrogen. KiK, no. 3, 1971, 549-554.
131. Medvedev, B. A., M. A. Teytel'boym, and A. Ye. Shilov. Mechanism of the gas-phase reaction of chlorofluoromethane with molecular fluorine. KiK, no. 3, 1971, 749-751.
132. Mkryan, T. G., K. T. Oganessian, and A. B. Nalbandyan. Study of the effect of small traces of benzol on combustion rates of  $H_2$  and  $CO_2$  at low pressures. Reaction rate constants of  $H + C_6H_6$  and  $O + C_6H_6$ . Armyanskiy fizicheskiy zhurnal, no. 4, 1971, 299-303.
133. Pariyskaya, A. V., and V. I. Vedeneyev. Mechanism of fluoridizing methane and its fluoride products. KiK, no. 3, 1971, 543-548.

E. U-V

134. Yanayt, Yu. A., G. A. Abakumov, G. I. Kromskiy, A. P. Simonov, V. V. Fadeyev, and R. V. Khokhlov. Tunable generation in the u-v range in a paraterphenyl solution with flash lamp pumping. ZhETF P, v. 13, no. 11, 1971, 616-619.

## F. COMPONENTS AND ACCESSORIES

### 1. Resonators

#### a. Design and Performance

- 135. Blanaru, L., A. Chetroui, and V. Vasiliu. Optical properties and application of multimode resonators for off-axis beams in gas laser design. *Studii si cercetari de fizica*, v. 22, no. 8, 1970, 831-839. (RZhF, 5/71, #5D837).
- 136. Karpushko, F. V. Laser resonator with variable length. IN: Sb 1, 55-57. (RZhF, 6/71, #6D948).
- 137. Karpushko, F. V. Dynamic resonator for pulsed lasers. *PTE*, no. 3, 1971, 186-189.
- 138. Ledneva, G. P. Drift of natural frequency in resonators with mirrors of the Fox-Smith and Michelson interferometer types. IN: Sb 1, 83-84. (RZhF, 5/71, #5D832).
- 139. Loyko, M. M. Resonator for laser-pumped dye lasers. IN: Sb 1, 69-70. (RZhF, 5/71, #5D857).
- 140. Vasil'yeva, N. N., and A. P. Ovechkin. Adjustment method for resonators with spherical mirrors. *IT*, no. 5, 1971, 28-29.
- 141. Velichko, A. G., M. L. Kats, and V. I. Tsoy. Optimizing the parameters of a Fabry-Perot etalon. *OiS*, v. 30, no. 5, 1971, 961-965.
- 142. Zakharov, M. I., and Yu. V. Troitskiy. Calculation of an optical resonator with mode selection by optical scattering and absorption. *OiS*, v. 30, no. 3, 1971, 490-495.

#### b. Mode Kinetics

- 143. Korolenko, P. V. Excitation of natural modes in a Fabry-Perot resonator by an off-axis TEM<sub>00</sub> wave. *OiS*, v. 30, no. 3, 1971, 496-502.

- 144. Lyubimov, V. V., and I. B. Orlova. Oscillations in a resonator with inclined mirrors. OIS, v. 30, no. 4, 1971, 758-761.
- 145. Vitkin, E. I., G. I. Zheltov, and A. S. Rubanov. Mode structure of emission frequency of a glass laser. DAN BSSR, no. 3, 1971, 213-216.

## 2. Q-Switches

- 146. Dobrokhotova, V. K., S. V. Lopina, Yu. V. Naboykin, and I. A. Rom-Krichevskaya. Use of passive Q-switches to control the kinetics of generation in a Nd glass laser. ZhPS, v. 14, no. 6, 1971, 1103-1105.
- 147. Gordeyev, V. Ye., and Yu. S. Matveyev. A nanosecond modulator for a Kerr switch. PTE, no. 2, 1971, 149-151.
- 148. Klochkov, V. P., V. L. Bogdanov, and B. S. Neporent. Q-switching a ruby laser by phthalocyanine vapors. OIS, v. 30, no. 6, 1971, 1088-1091.
- 149. Volkova, Ye. A., V. A. Zamkov, and L. V. Nalbandov. Precise measurement of absolute values of Kerr constant. OIS, v. 30, no. 3, 1971, 556-561.

## 3. Pumping Sources

- 150. Bodretsova, A. I., A. A. Kaminskiy, N. N. Kirillova, and S. I. Levikov. Crystal laser with a pyrotechnic pump. PTE, no. 3, 1971, 180-181.
- 151. Bykovskiy, V. F., A. V. Gorelik, T. A. Kulikova, V. S. Kukhmistrov, Ye. P. Ostapchenko, and Yu. N. Shevchenko. Pumping ion lasers with a-c line power. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Gazorazryadnyye pribory. No. 3(19), 1970, 28-32. (RZhF, 4/71, #4D1013).
- 152. Chernigovskiy, V. V. Forming powerful optical pulses of variable duration. IN: Leningradskiy elektrotekhnicheskiy institut. Izv. No. 94, 1970, 78-80. (RZhSvetotekhnika, 5/71, #5B122).

153. Daniel', Ye. V., and I. V. Kolpakova. Absolute measurement of energy emitted by an IPKSh-580/20 lamp in the 430-920 nm spectral range. ZhPS, v. 14, no. 4, 1971, 610-613.
154. Deryugin, I. A., Ye. T. Kucherenko, V. N. Feoktistov, V. I. Shevchenko, and V. S. Abalakin. Types of lamps and discharges used to pump lasers. IN: Moskovskiy gosudarstvennyy pedagogicheskiy institut. Uchenyye zapiski. No. 391, 1970, 245-252. (RZhF, 4/71, #4D1092).
155. Divil'kovskiy, I. M., D. V. Kovalevskiy, and A. L. Shakhnovskiy. Using vacuum arc relays as triggers for laser pump lamps. PTE, no. 2, 1971, 202.
156. Gerasimov, V. A., Ye. V. Los', and V. M. Podgayetskiy. Emission spectra and limiting loads of a flash lamp under double or single discharges of short duration. ZhPS, v. 14, no. 3, 1971, 508-515.
157. Gerasimov, V. A., Ye. V. Los', and N. N. Shvindt. Study of discharge in flash lamps by means of a Mach-Zender interferometer. ZhPS, v. 14, no. 6, 1971, 986-989.
158. Goncharov, I. G., and V. V. Kostyukov. Generator of 100a pulses for semiconductor lasers. PTE, no. 2, 1971, 132-133.
159. Gutner, A. B., R. A. Zhitnikov, and A. I. Okunevich. Optical orientation of Kr atoms in the metastable  $^3P_2$  state. ZhETF P, v. 13, no. 8, 1971, 420-421.
160. Kovalenko, Ye. S. Exfocal pumping in elliptical illuminators. IVUZ Fiz, no. 5, 1971, 148-151.
161. Mitrofanov, A. S. Operation of laser elements in the extended pump pulse regime. IN: Leningradskiy institut tochnoy mekhaniki i optiki. Trudy. No. 67, 1970, 66-75. (RZhF, 4/71, #4D1091).
162. Mitrofanov, A. S. Graphic-analytic calculation of a spheric-conic system for optically pumping a laser. IN: Leningradskiy institut tochnoy mekhaniki i optiki. Trudy. No. 67, 1970, 43-47. (RZhF, 4/71, #4D1094).

- 163. Popovich, M. M., and V. V. Uroshevich. Axial distribution of electron concentration in xenon flash lamps. TVT, no. 3, 1971, 627-628.
- 164. Smolkin, N. M., N. B. Berdnikov, and L. F. Zaytsev. Emission spectra of xenon lamps. OMP, no. 4, 1971, 62-63.
- 165. Volkova, G. A., and T. Ya. Smolyar. Effect of ignition on emission from flash lamps. ZhPS, v. 14, no. 4, 1971, 717-719.

#### 4. Polarizers

- 166. Vul', V. A. Electronic circuit for controlling an electrooptical polarity switch. IVUZ Radioelektr, no. 6, 1971, 648-656.

#### 5. Deflectors

- 167. Katsman, V. I. Optomechanical device for deflecting an optical beam. Author's certificate, USSR, No. 262943, published July 28, 1970. (RZh Metrolog, 3/71, #3.32.1402P).
- 168. Konovalova, S. A. Device for discrete deflection of an optical beam. Otkr izobr, no. 10, 1971, 159. Author's Certificate No. 297940.
- 169. Mikaelyan, A. L., M. M. Koblova, and E. A. Zasovin. Study of beam deflection systems using lithium niobate crystals. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 120-124.
- 170. Sergeyeva, A. I. Achromatic nonabsorbing semitransparent optical dividers. OMP, no. 3, 1971, 65-66.
- 171. Sheynis, N. V. Wedges with a variable refracting angle. OMP, no. 3, 1971, 23-26.

172. Stolyarov, A. K., N. G. Prokhorov, and V. N. Shakhgedanov. Two-dimensional deflection of light with a Bragg ultrasonic cell. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 149-151.

#### 6. Filters

173. Furman, Sh. A., and M. D. Levina. Stabilization in the position of the passband of a narrowband dielectric interference filter. OMP, no. 5, 1971, 18-21.
174. Godina, D. A., L. M. Igol'nikova, and S. S. Savko. A film optical filter with circular polarization. Author's Certificate, USSR, no. 276460, published Oct. 22, 1970. (RZhMetrolog, 5/71, #5.32.1471P).
175. Gromov, Yu. N., V. P. Tychinskiy, N. Sh. Khaykin, and V. P. Khar'kov. Internal frequency selection in a CO<sub>2</sub> laser using a Fabry-Perot interferometer. PTE, no. 3, 1971, 183-186.
176. Ivanova, V. G. Application of balsamine-m in the preparation of polarizing filters. OMP, no. 3, 1971, 64-65.
177. Korolev, F. A., A. Yu. Klement'yeva, and T. F. Meshcheryakova. Multilayer interference cutoff systems. OIS, v. 30, no. 5, 1971, 966-970.
178. Krupitskiy, E. I., L. P. Karpov, and I. S. Barbanel'. Device for coherent optical filtering. Otkr izobr, no. 9, 1971, 159. Author's Certificate #297058.
179. Krupitskiy, E. I., and L. P. Karpov. A device for coherent filtering. Otkr izobr, no. 7, 1971, 159. Author's Certificate No. 295165.
180. Ratner, A. M. Statistics of self mode-locking in a solid state laser with a slow relaxation filter. RiE, no. 5, 1971, 813-823.
181. Rybakov, V. A. Self-oscillation mode in a laser with bleachable filter. IN: Sb 1, 60-62. (RZhF, 6/71, #6D945).



182. Sokolova, R. S., and Ye. V. Bel'kova. Narrowband reflex filters for the ultraviolet region of the spectrum. OIS, v. 30, no. 3, 1971, 562-565.
183. Validov, M. A., and M. A. Gisin. Interference filter. Author's Certificate, USSR, No. 266265, published July 8, 1970. (RZhMetrolog, 5/71, #5.32.1472).
184. Validov, M. A., G. Ya. Podvigalkina, M. A. Gisin, and R. A. Nagulina. Optical filter based on indium antimonide. ZhPS, v. 14, no. 5, 1971, 941-943.
185. Veynberg, T. I., and S. P. Lun'kin. Infrared light filter based on alumocalcium with a bandpass in the 1.5-5.0  $\mu$  range. OMP, no. 2, 1971, 60-61.
186. Vlasov, S. N., V. I. Talanov, and A. I. Khizhnyak. Effect of a bleachable filter on the transverse radiation structure of pulsed solid-state lasers. IVUZ Radiofiz, no. 4, 1971, 570-574.
187. Voytovich, A. P., and A. Ya. Smirnov. Some peculiarities in the selection of frequencies in a gas laser with a nonlinear absorption cell. DAN BSSR, no. 3, 1971, 206-208.

#### 7. Diffraction Elements

188. Mergelyan, O. S. Diffraction of electromagnetic waves by a three-dimensional periodic structure. OIS, v. 30, no. 6, 1971, 1123-1125.
189. Strezhnev, S. A., N. M. Balyasnikov, and Yu. A. Shuba. Enlarged-aperture concave diffraction grating for the vacuum ultraviolet range. OMP, no. 4, 1971, 63-64.

#### 8. Mirrors

190. Sokolova, R. S. Wideband mirrors for the ultraviolet spectral range. OMP, no. 5, 1971, 46-47.
191. Sokolova, R. S., and T. N. Krylova. Obtaining reflective coatings on precision surfaces by a chemical method. OMP, no. 3, 1971, 43-45.

## 9. Scatterers, Attenuators

- 192. Andreyeva, N. V., and V. S. Filimonov. Optical attenuator gratings with ferro-chromium coating. OMP, no. 2, 1971, 51-52.
- 193. Voyshvillo, N. A. New glass for the scattering of transmitted directional radiation. OMP, no. 5, 1971, 40-43.

## 10. Detectors

- 194. Alfyorov, Zh. I., O. A. Ninua, I. I. Protasov, and V. G. Trofim. Selective heterophotoelements based on an AlAs-GaAs system. FTP, no. 5, 1971, 988-990.
- 195. Bezdetnyy, N. M., A. Kh. Zeynally, N. N. Lebedeva, and M. K. Sheynkman. Photo emf in an SbSI ferro-semiconductor. FTP, no. 5, 1971, 1016-1017.
- 196. Bochkareva, N. I., L. G. Paritskiy, and S. M. Ryvkin. Semiconductor photographic system based on heterojunctions of Si-PbS and Ge-PbS. FTP, no. 5, 1971, 963-965.
- 197. Buzanova, L. K., A. Ya. Gliberman, A. N. Istomin, N. N. Kamenskiy, A. S. Lisin, and Yu. V. Prichko. Frequency characteristic of a silicon photodiode under varying illumination. RiE, no. 4, 1971, 572-577.
- 198. Buzanova, L. K., A. Ya. Gliberman, A. S. Lisin, and Yu. V. Prichko. Kinetics of photocurrent in thin-base Si photodiodes. RiE, no. 4, 1971, 565-571.
- 199. Chashchin, S. P., I. S. Aver'yanov, N. S. Baryshev, M. P. Shchetinin, and N. P. Markina. Non-cooled photodiode based on lead sulfide single crystals. FTP, no. 5, 1971, 1007-1008.
- 200. Dunayev, A. S. Probability density of noise at a photo-detector output, for a two-level background noise model. OMP, no. 5, 1971, 15-18.

201. Dushkov, I. I., N. V. Karlov, B. B. Krynetskiy, V. A. Mishin, and R. P. Petrov. Antenna characteristics of a heterodyne receiver for CO<sub>2</sub> laser emission. KSpF, no. 1, 1971, 40-44. (RZh Radiot, 5/71, #5D847).
202. Dyubko, S. F., and M. N. Yefimenko. Detection properties of point contact InSb at  $\lambda = 337\mu$  and  $T=300^{\circ}\text{K}$ . ZhETF P, v. 13, no. 10, 1971, 531-533.
203. Fedotov, Ya. A., G. A. Gruzdeva, and Ye. F. Uvarov. Volt-ampere characteristic of a single-type n-Ge--n-Si heterojunction under irradiation by neutrons. FTP, no. 5, 1971, 966-967.
204. Fedotov, Ya. A., V. A. Supalov, T. P. Manuylova, A. V. Vanyukov, and N. M. Kondaurlov. Edge emission from zinc telluride during electroluminescent excitation in a ZnTe-CdSe system. FTP, no. 5, 1971, 852-857.
205. Kovalenko, P. A., and L. M. Panasyuk. Longitudinal photoeffect in p-Si--n-CdS heterojunctions. FTP, no. 4, 1971, 658-661.
206. Kremenchugskiy, L. S., and S. K. Sklyarenko. Coordinate-sensitive pyroelectric radiation detector. PTE, no. 2, 1971, 219-220.
207. Mikhalev, Yu. N. Study of the frequency characteristics of semiconductor photodetectors by the method of short light pulses with random shape. FTP, no. 5, 1971, 1013-1015.
208. Remezov, V. V. Method and basic principles for constructing apparatus to measure inertia of radiation detectors. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Kontrol'no-izmeritel'naya apparatura. No. 3(21), 1970, 128-135. (RZh Radiot, 3/71, #3D534).
209. Rogovoy, I. D. Luminescent-photoelectric method for measuring the spectral sensitivity of photocells. OMP, no. 2, 1971, 16-18.

210. Sollogub, V. S. Calculation of diffusely reflecting conic surfaces. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Elektronika SVCh. No. 11, 1970, 64-75. (RZhF, 4/71, #4D831).
211. Zakharov, I. S., and L. G. Lavrent'yeva. Spectral photosensitivity characteristics of abrupt heterojunctions. IVUZ Fiz, no. 6, 1971, 12-16.
212. Zakharov, V. P., and V. K. Kabalov. Effect of thermal oxidation on short-wave conductivity of n-Si elements with variable thickness. RiE, no. 4, 1971, 643-644.

G. NONLINEAR OPTICS

1. Frequency Conversion

- 213. Berezkin, V. V., and E. S. Nitsiyevskiy. Device for discrimination of coherent frequencies. Otkr izobr, no. 12, 1971, 204. Author's Certificate No. 299935.
- 214. Davydov, B. L., L. D. Derkacheva, V. V. Dunina, M. Ye. Zhabotinskiy, V. F. Zolin, L. G. Koreneva, and M. A. Samokhina. Charge transfer and second harmonic generation in laser emission from molecular crystals. OiS, v. 30, no. 3, 1971, 503-507.
- 215. Davydov, B. L., M. Ye. Zhabotinskiy, V. F. Zolin, L. G. Koreneva, and M. A. Samokhina. Observation of vector synchronism in second harmonic generation of neodymium laser emission in methanitroaniline monocrystals. ZhETF P, v. 13, no. 7, 1971, 336-339.
- 216. Dmetriyev, V. G., A. G. Yershov, P. I. Zudkov, G. A. Sharif, and Ye. M. Shvom. Generation of optical harmonics in a pulsed mode with high repetition rate. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 116-119.
- 217. Kielich, S. Doubling of laser frequency in isotropic elements with electrically removed center of symmetry. Postepy fizyki, no. 2, 1971, 181-210.
- 218. Semenova, T. A. Theory of multiphoton harmonic generation in gases. IVUZ Radiofiz, no. 4, 1971, 585-591.
- 219. Tomov, I. V., and A. S. Chirkin. Effectiveness in the generation of higher order optical harmonics, and multi-quantum processes in a multimode emission field. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 110-115.
- 220. Valitova, N. R., and K. V. Goncharov. Second harmonic generation in lithium tantalate. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskii sbornik. Kontrol' no-izmeritel'naya apparatura. No. 3(21), 1970, 151-153. (RZhF, 5/71, #5D806).

## 2. Parametric Processes

- 221. Deryugin, I. A., V. N. Kurashov, and A. I. Mashchenko. Quasi-classical approximation for a parametric amplifier in optical information systems. OIS, v. 30, no. 5, 1971, 952-956.
- 222. Kovrigin, A. I., and P. V. Nikles. Resonatorless optical parametric generator using an  $\alpha$ -HIO<sub>3</sub> crystal. ZhETF P, v. 13, no. 8, 1971, 440-443.
- 223. Mirovskaya, Ye. A. Four-wave parametric interactions in a nonlinear medium. RiE, no. 6, 1971, 1058-1060.
- 224. Sukhorukov, A. P., and A. K. Shchednova. Parametric amplification of light in the field of a modulated laser wave. ZhETF, v. 60, no. 4, 1971, 1251-1263.

## 3. Stimulated Scattering Effects

### a. Raman

- 225. Afanas'yev, A. A. Emission amplification by stimulated Raman scattering. IN: Sb 1, 48-50. (RZhF, 6/71, #6D913).
- 226. Grasyuk, A. Z., I. G. Zubarev, and V. F. Mulikov. Broadening the giant pulse from a neodymium glass laser by means of the stimulated Raman scattering effect in liquid nitrogen. KSpF, no. 2, 1971, 27-31.
- 227. Korolev, F. A., V. I. Odintsov, V. N. Rogovoy, and Ye. Yu. Sokolova. Threshold characteristics of stimulated Raman scattering in methane during excitation in a resonator. OIS, v. 30, no. 4, 1971, 776-783.
- 228. Kudryavtseva, A. D., A. I. Sokolovskaya, and M. M. Sushchinskiy. Temporal and spatial narrowing of a stimulated Raman scattering pulse in liquid nitrogen. KSpF, no. 2, 1971, 32-37.
- 229. Movsesyan, M. Ye., and Zh. O. Ninoyan. Spectral line-width of stimulated Raman scattering in various substances. DAN ArmSSR, v. 51, no. 2, 1970, 83-85. (RZhF, 5/71, #5D800).

230. Peregudov, G. V. Tunable laser using stimulated Raman scattering by polaritons. UFN, v. 104, no. 1, 1971, 156-160.
231. Zubov, V. A., P. P. Kircheva, and M. M. Sushchinskiy. Effects of pump energy on line width of stimulated Raman scattering in a crystal powder. KSpF, no. 1, 1971, 45-50.
- b. Brillouin
232. Golger, A. L. Competition between stimulated Brillouin and Raman scattering in liquids. VMU. Fizika, astronomiya, no. 6, 1970, 693-698. (RZhF, 6/71, #6D915).
233. Grasyuk, A. Z., V. I. Popovichev, V. V. Ragul'skiy, and F. S. Fayzullof. Amplification of emission brightness with a Brillouin laser. IN: Kvantovaya elektronika. Sbornik statey. No. 1, Moskva, Sovetskoye radio, 1971, 70-78.
234. Rabinovich, M. I., and S. M. Faynshteyn. Generation of nonlinear sound waves in stimulated Brillouin scattering in a plasma. ZhETF, v. 60, no. 5, 1971, 1696-1701.
235. Starunov, V. S. Effect of entropy scatter on results of measuring hypersonic velocity by means of stimulated scattering spectra. IAN Fiz, no. 5, 1971, 999-1002.

#### 4. Self-Focusing

236. Askar'yan, G. A., V. G. Mikhalevich, and G. P. Shipulo. Nonlinear scattering and self-focusing of intense light by perturbations of the medium near absorbing inhomogeneities. ZhETF, v. 60, no. 4, 1971, 1270-1272.

#### 5. Beam Modulation

237. Adrianova, I. I., L. N. Asnis, A. V. Petrova, Yu. V. Popov, and V. Ye. Terent'yev. Modulation of infrared radiation passing repeatedly through a GaAs crystal. OiS, v. 30, no. 5, 1971, 974-976.

238. Blokh, O. G., V. K. Zaytsev, I. M. Klimov, M. I. Lobskiy, V. M. Ovchinnikov, and Yu. A. Pirogov. Some parameters of quartz crystals used in electro-optical modulation of light. *OiS*, v. 30, no. 6, 1971, 1104-1107.
239. Bokhonov, A. F. Regularly-pulsed emission intensity regime for ruby and neodymium lasers with internal loss modulation. IN: *Sb 1*, 53-55. (*RZhF*, 6/71, #6D951).
240. Dianova, V. A., and V. N. Parygin.  $\text{LiNbO}_3$  crystal optical modulator. *IVUZ Radioelektr*, no. 6, 1971, 606-612.
241. Gisin, B. V. Orientation of electrooptic crystals for phase modulation. *Kristall*, no. 3, 1971, 638-640.
242. Kurochkin, A. P., and V. I. Troitskiy. Recording amplitude-phase distributions in carrier space frequency. *RiE*, no. 4, 1971, 504-517.
243. Mustel', Ye. R., V. N. Parygin, and L. V. Simonyan. Multicavity optical modulator. *VMU*, no. 3, 1971, 277-281.
244. Nesterova, Z. V. Phase detection errors in an SHF electrooptic modulator with a modulated indication method. *OMP*, no. 5, 1971, 64-65.
245. Petrova, T. V., V. N. Moshayskiy, V. M. Pankratov, and A. M. Moyya. The ML-4 electrooptic modulator. *PTE*, no. 2, 1971, 275.
246. Rybakov, V. A. Generating regular unattenuated pulsed emission with an internal periodic modulator. IN: *Sb 1*, 58-60. (*RZhF*, 6/71, #6D1033).
247. Samson, A. M., and V. A. Rybakov. Generation of continuously regulated pulsed emission with the use of an internal periodic modulator. *Vestsi AN BSSR. Seryya fizika-matematichnykh navuk*, no. 2, 1971, 105-114.



248. Savinkov, A. I., A. A. Blistanov, V. F. Gayduchenya, V. Yu. Markovskiy, I. S. Rez, and M. P. Shaskol'skaya. Studies on the strength characteristics of KDP crystals. Kristall, no. 2, 1971, 450-451.
249. Sinyakov, Ye. V., Ye. F. Dudnik, and V. M. Duda. Repolarization processes in BaTiO<sub>3</sub> single crystals in rhombic and rhombohedral phases. Kristall, no. 3, 1971, 568-572.
250. Sinyakov, Ye. V., A. A. Golovyanko, and V. G. Savchenko. Electrooptic properties of solid solutions of BaTiO<sub>3</sub>-Ta<sub>2</sub>O<sub>5</sub> single crystals. Kristall, no. 3, 1971, 553-556.
251. Vasilevskaya, A. S., and A. S. Sonin. Relation of dielectric and electrooptic properties of KDP-type ferroelectric crystals in the paraelectric phase. FTT, no. 6, 1971, 1550-1556.
252. Volkova, Ye. N., V. A. Dianova, A. L. Zuyev, A. N. Izrailenko, A. S. Lipatov, V. N. Parygin, L. N. Pashkovich, and L. Ye. Chirkov. Electrooptic and piezoelectric properties of  $\alpha$  HIO<sub>3</sub> crystals. Kristall, no. 2, 1971, 346-349.
253. Vorobeychikov, E. S., and L. N. Popov. Operator model for frequency modulation of optical emission. IVUZ Fiz, no. 5, 1971, 35-39.
254. Zemlyachev, Ye. Z., and V. N. Parygin. Modulator with an optical resonator. RiE, no. 6, 1971, 1010-1016.
255. Zhashkov, A. A., V. M. Pankratov, A. M. Moyya, and V. G. Somov. Axial electrooptic effect in oblique shear planes of lithium niobate. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 147-148.

#### 6. Acoustic Interactions

256. Adrianova, I. I., V. B. Volkonskiy, and Yu. G. Korolev. Diffraction of polarized light by ultrasonic waves in KDP crystals. OiS, v. 30, no. 6, 1971, 1126-1129.

257. Alekseyev, A. V., and U. Kh. Kopvillem. Acoustic saturation waves. *Akusticheskiy zhurnal*, no. 2, 1971, 299-300.
258. Askar'yan, G. A. Self-focusing of high-power sound in generation of bubbles. *ZhETF P*, v. 13, no. 7, 1971, 395-396.
259. Badikov, V. V., S. V. Bogdanov, A. A. Godovikov, I. I. Zubrinov, and D. V. Sheloput. Proustite single crystals as a material for optoacoustic devices. *Akusticheskiy zhurnal*, no. 2, 1971, 300-301.
260. Bogdanov, V. L., V. V. Lemanov, and N. K. Yushin. Collinear interaction of axial elastic waves in lithium niobate crystals. *FTT*, no. 5, 1971, 1450-1453.
261. Chernets, A. N., A. I. Timchenko, and V. V. Silin. Brillouin scattering of coherent light in coherent hyper-sound. *UFZh*, no. 4, 1971, 678-680.
262. Fabelinskiy, I. L. Interaction of light with sound. *IAN Fiz*, no. 5, 1971, 874-882.
263. Khashkhozhev, Z. M., V. V. Lemanov, and R. V. Pisarev. Scattering of light by acoustic phonons in  $\text{LiNbO}_3$  and  $\text{LiTaO}_3$ . *IAN Fiz*, no. 5, 1971, 987-990.
264. Klyukin, I. I., and E. I. Avferonok. VII All-Union Acoustic Conference. *Sudostroyeniye*, no. 5, 1971, 57-59.
265. Lemanov, V. V., and O. V. Shakin. Features of optical scattering in hypersonic waves in uniaxial crystals. *ZhETF P*, v. 13, no. 10, 1971, 549-553.
266. Ustanov, R. G., and V. A. Pirozhkov. Frequency dependence of several parameters of  $\text{LiNbO}_3$ . *UFZh*, no. 6, 1971, 1023-1025.
267. Zverev, V. A., A. M. Pavlenko, and G. A. Sharonov. Possibility of obtaining visible images of sound sources during optical diffraction in ultrasound. *OiS*, v. 30, no. 6, 1971, 1157-1169.

## 7. Birefringence

- 268. Grechushnikov, B. N., and V. S. Chudakov. Modulation method for observing birefringence. Author's Certificate, USSR. No. 276459, published Oct. 22, 1970. (RZhF, 6/71, #6D842).
- 269. Malysh, A. G., Yu. A. Nestrizhenko, and V. V. Shevchenko. Observation of birefringence caused by pumping action in laser active elements. PTE, no. 2, 1971, 207-209.
- 270. Pisarev, R. V., I. G. Siniy, N. N. Kolpakova, and Yu. M. Yakovlev. Magnetic birefringence of light in ferrite garnets. ZhETF, v. 60, no. 6, 1971, 2188-2202.

## 8. General Theory

- 271. Akhmanov, S. A., Yu. Ye. D'yakov, and A. S. Chirkin. Cumulative nonlinear optical effects in a pump field with a wide frequency spectrum. ZhETF P, v. 13, no. 12, 1971, 724-728.
- 272. Aleksandrov, A. P., V. I. Bredikhin, and V. N. Genkin. Two-photon absorption by centrally symmetric organic molecules. ZhETF, v. 60, no. 6, 1971, 2001-2010.
- 273. Bakay, A. S. Stationary modes in a system of interacting waves with external excitation. UFZh, no. 4, 1971, 609-616.
- 274. Bashkanskiy, E. G., and V. V. Mityugov. Methods of group theory in photon statistics. Teoreticheskaya i matematicheskaya fizika, no. 3, 1971, 348-357.
- 275. Bel'skiy, A. M., T. M. Nesterenko, and A. P. Khapalyuk. Diffraction of a Gaussian beam on a plane surface. VBU, Seriya 1, no. 3, 1970, 49-54. (RZhF, 6/71, #6D867).
- 276. Chugayevskiy, Yu. V. Method of overtones in the theory of nonlinear diffraction of optical beams and pulses. IAN Mold, no. 2, 1970, 72-75. (RZhF, 5/71, #5D758).
- 277. Danilevko, Yu. K., A. A. Manenkov, V. S. Nechitaylo, and V. Ya. Khaimov-Mal'kov. Nonlinear scattering of light in inhomogeneous media. ZhETF, v. 60, no. 4, 1971, 1245-1250.

278. Diatropov, D. B., and A. B. Vaganov. Equatorial Kerr effect at relative changes in light intensity of the order of  $10^{-7}$ . FTT, no. 3, 1971, 937-939.
279. Dovgiy, Ya. O., N. I. Butsko, V. N. Korolyshin, and Ye. G. Moroz. Optical properties of  $\text{Ag}_3\text{AsS}_3$  single crystals. FTT, no. 4, 1971, 1202-1203.
280. Fedorov, F. I. Determining the parameters of optically isotropic absorptive media in reflected light. CiS, v. 30, no. 3, 1971, 528-531.
281. Golovey, M. P., I. N. Kalinkina, and G. I. Kosourov. Vector synchronism in the case of  $\text{oe} \rightarrow \text{e}$  interaction of optical waves in nonlinear crystals. OiS, v. 30, no. 5, 1971, 947-951.
282. Gulyayev, Yu. V., and P. Ye. Zil'berman. Superheterodyne amplification of electromagnetic waves. FTT, no. 4, 1971, 955-957.
283. Karamyan, A. A. Infrared absorption spectra of  $\text{KMnF}_3$ ,  $\text{KCoF}_3$  and  $\text{RbCoF}_3$  crystals. OiS, v. 30, no. 3, 1971, 578-579.
284. Kazakov, A. L. Dynamic electrooptic effect. FTT, no. 4, 1971, 1229-1230.
285. Kolodziejczak, J. Nonlinear optical phenomena in semiconductors. Postepy fizyki, no. 3, 1971, 229-248.
286. Kovarskiy, V. A., and Ye. Yu. Perlin. Multiphoton interzone transitions in crystals. FTT, no. 4, 1971, 1217-1219.
287. Kuklev, Yu. I. Scattering of coherent light in a cylindrical electron beam. IN: Kvantovaya elektronika. Sbornik statey. No. 1, Moskva, Sovetskoye radio, 1971, 64-69.
288. Mayer, M., and G. Shimchak. The crystal field in  $\text{LiNbO}_3:\text{Cr}^{3+}$ . FTT, no. 4, 1971, 1230-1232.
289. Ryzhakova, S. I., and I. V. Tomov. Thermal nonlinear rotation of a laser radiation polarization plane. VMU, no. 2, 1971, 218-220.
290. Serdyukov, A. N. Electrodynamics of optically active media. IN: Sb 1, 22-23. (RZhF, 6/71, #6D837).

291. Smirnov, D. F., and A. S. Troshin. Scatter of an intense monochromatic optical wave in a two-level system. VLU. Seriya 4, Fizika, khimiya, no. 1, 1971, 93-101.
292. Voronin, E. S., M. I. Divlekeyev, Yu. A. Il'inskiy, and V. S. Solomatin. Longitudinal and transverse resolving power during image conversion by nonlinear optics methods. Ois, v. 30, no. 6, 1971, 1118-1122.
293. El'sharnubi, M. A. Optical absorption by free hot current carriers. VMU, no. 3, 1971, 262-269.
294. Zon, B. A., N. D. Manakov, and L. P. Rapoport. Multiphoton excitation of atoms. ZhETF, v. 60, no. 4, 1971, 1264-1269.

## H. SPECTROSCOPY OF LASER MATERIALS

295. Abagyan, S. A., G. A. Ivanov, Yu. Ye. Shanurin, and V. I. Amosov. Refractive index of GaP in the infrared region. FTP, no. 5, 1971, 1001-1003.
296. Al'tshuler, S. A., R. M. Valishev, B. I. Kochelayev, and A. Kh. Khasanov. Detection of phonon avalanching by the Brillouin optical scattering method, for pulse saturation of paramagnetic resonance. ZhETF P, v. 13, no. 10, 1971, 535-538.
297. Babiychuk, I. P., A. A. Gumilevskiy, and Ye. R. Dobrovinskaya. Study of absorption anisotropy in corundum crystals. IN: Sbornik. Monokristally i tekhnika. No. 2. Khar'kov, 1970, 175-176. (RZhF, 5/71, #5D730).
298. Baroyev, T. R., P. G. Yelisseyev, N. V. Siukayev, and M. K. Khadikov. Optical absorption in doped indium phosphide. FTP, no. 5, 1971, 968-969.
299. Bashkirov, Sh. Sh., N. G. Ivoylov, and V. A. Chistyakov. Temperature dependence of combined hyperfine interaction in YIG. FTT, no. 3, 1971, 689-692.
300. Batsanov, S. S., V. N. Korobeynikova, V. P. Kazakov, and L. I. Kobets. Thermoluminescence of  $Tb^{3+}$ -activated  $CaF_2$  crystals. OIS, v. 30, no. 3, 1971, 484-489.
301. Bugay, A. A., and V. M. Maksimenko. Fieldless temperature resonance in ruby (T-resonance). ZhETF P, v. 13, no. 10, 1971, 533-535.
302. Damaskin, I. A., V. A. Kovarskiy, S. L. Pyshkin, S. I. Radautsian, N. A. Ferdman, and V. Ye. Tezlevan. Luminescence in  $CdIn_2S_4$  single crystals under giant-pulse pumping from a ruby laser. IN: Sbornik. Issledovaniya slozhnykh poluprovodnikov. Kishinev, 1970, 85-89. (RZhF, 5/71, #5D843).
303. Dravnov, L. N., D. A. Kichigin, and E. A. Chernina. Temperature dependence of width and form of the EPR line of  $V^{4+}$  ions in corundum single crystals. FTT, no. 5, 1971, 1489-1491.

304. D'yachenko, V. G., and M. S. Tyutin. Kinetics of dopant center formations in  $\text{CaF}_2 : \text{TR}^{3+}$ . FTT, no. 3, 1971, 926-927.
305. Garashina, L. S., and B. P. Sobolev. Variable-composition hexagonal phases in  $\text{CaF}_2-(\text{Y}, \text{Ln})\text{F}_3$  systems. Kristall, no. 2, 1971, 307-313.
306. Gintoft, R. I., and A. G. Makhanev. Two-photon activation of  $\text{CaF}_2 : \text{Er}^{3+}$  crystal luminescence. ZhPS, v. 14, no. 3, 1971, 540-541.
307. Glebov, G. D., N. A. Yufis, and M. S. Chupina. Study of internal, subsurface, and surface gas mixtures in solids by means of a laser mass spectrometer. IAN Fiz, no. 3, 1971, 644-648.
308. Havlicek, V., P. Novak, and M. Vichr. EPR of  $\text{V}^{4+}$  in garnet. PSS(b), v. 44, no. 1, 1971, K21-K24.
309. Kitayeva, V. F., and I. L. Chistyy. Fine structure of Rayleigh lines in sapphire crystal. ZhETF P, v. 13, no. 11, 1971, 611-615.
310. Kolobkov, V. P., and G. T. Petrovskiy. Spectral luminescence of rare earth elements in photoberyllate glass. OMP, no. 3, 1971, 53-60.
311. Kovalev, I. F., L. A. Ozolin, V. A. Arbuzova, I. V. Shevchenko, M. G. Voronkov, and E. Ya. Lukevits. Basic line and band parameters in vibrational spectra of Raman scattering and i-r absorption in tetramethoxysilane, methylmethoxysilane, and their deuterio-substituents. Izv AN LatSSR. Seriya khimiya, no. 5, 1970, 533-543. (RZhF, 4/71, #4D388).
312. Levshin, L. V., and N. Nizamov. Luminescence associates of rhodamine dyes and their spectroscopic appearance. VMU, no. 3, 1971, 252-256.
313. Mitrofanov, Yu. F., Yu. Ye. Pol'skiy, and M. L. Falin. Dual electron-nuclear resonance of  $\text{Ti}^{2+}$  in  $\text{CaF}_2$  and  $\text{SrF}_2$  crystals. FTT, no. 6, 1971, 1830-1831.

314. Osiko, V. V., and I. A. Shcherbakov. Calculation for equilibrium of point defects in  $\text{CaF}_2$ - $\text{NdF}_3$  crystals. FTT, no. 4, 1971, 983-988.
315. Rumyantsev, V. N., S. V. Grum-Grzhimaylo, and O. N. Boksha. Optical absorption spectra of crystals in hydrothermal corundum with impurities. Kristall, no. 2, 1971, 445-447.
316. Sakun, V. P. Spin-lattice relaxation of  $\text{CaF}_2 : \text{U}^{3+}$  tetragonal centers. FTT, no. 6, 1971, 1741-1748.
317. Saytkulov, I. G., and A. L. Stolov. Energy transfer among ions for the case of multiple-center crystalline systems. FTT, no. 3, 1971, 863-866.
318. Sevast'yanov, B. K., and V. P. Orekhova. Optical absorption spectrum of excited  $\text{Cr}^{3+}$  ions in  $\text{MgAl}_2\text{O}_4$  spinel. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 125-134.
319. Shatrov, V. D., Ye. B. Gordon, A. N. Ponomarev, and V. L. Tal'roze. Luminescence of solid organic dyes under the bombardment of thermally excited hydrogen atoms. ZhETF P, v. 13, no. 7, 1971, 344-346.
320. Trukhanenko, E. M., L. I. Panfilova, and V. N. Favorin. Spectral method of measuring component concentrations of an He-Ne mixture in a sealed-off tube. ZhPS, v. 14, no. 4, 1971, 615-618.
321. Uglanova, V. V. Optical spectra of excited and optically bleached LiF single crystals in the 105-250 nm range. IN: Sbornik. Monokristally i tekhnika. No. 1. Khar'kov, 1970, 70-77. (RZhF, 4/71, #4D453).
322. Vodop'yanov, L. K., B. S. Umarov, L. A. Sysoyev, and L. A. Sarkisov. Study of first-order Raman scattering in  $\text{Cd}_x\text{Zn}_{1-x}\text{S}$  mixed junction crystals. FTT, no. 3, 1971, 799-801.
323. Yablonskiy, G. P., V. P. Gribkovskiy, L. A. Kravtsov, A. K. Lyakhovich, and P. A. Tupenevich. Excitation spectra of dopant photoluminescence in zinc telluride. ZhPS, v. 14, no. 5, 1971, 929-931.



324. Yeremin, M. V., B. P. Zakharchenya, A. Ya. Ryskin, and Yu. A. Stepanov. Intensity of Zeeman components of the 4130 Å resonance line and circular dichroism in  $\text{CaF}_2 : \text{Eu}^{2+}$ . FTT, no. 4, 1971, 1128-1134.
325. Yermolayev, V. L., and T. A. Shakhverdov. Nonradiative energy transfer from rare earth ions to dyes in solid solutions. OiS, v. 30, no. 4, 1971, 648-654.

**J.        SHORT PULSE GENERATION**

326.    Vanyukov, M. P., V. I. Isayenko, P. P. Pashinin,  
         V. A. Serebryakov, V. N. Sizov, and A. D. Starikov.  
         Forming high-power pulses with a steep leading edge in  
         a laser system with passive nonlinear elements. IN:  
         Kvantovaya elektronika. Sbornik statey. No. 1. Moskva,  
         Sovetskoye radio, 1971, 35-41.

K. CRYSTAL GROWING

- 327. Musatov, M. I., and A. O. Ivanov. Form of the crystallized face and temperature gradients in corundum crystal growing by the Czochralski method. OMP, no. 2, 1971, 58-59.
- 328. Musatov, M. I., A. O. Ivanov, and Ye. A. Sidorova. Comparison of the absorption spectra of corundum crystals prepared by the Czochralski and Verneuil methods. OMP, no. 3, 1971, 63-64.
- 329. Timofeyeva, V. A., and I. B. Dokhnovskiy. Growing YIG from melt solutions with point seeding under dynamic conditions. Kristall, no. 3, 1971, 616-621.

L. GENERAL LASER THEORY

- 330. Bankovskiy, A. S. Energy method for computing spectra of quantum systems in powerful e-m fields. IN: Sbornik, Voprosy elektronnoy tekhniki. Saratov, 1971, 60-64. (RZhF, 6/71, #6Zh49).
- 331. Blazhin, V. D., and A. S. Selivanenko. Effect of electromagnetic radiation on superconductors. KSpF, no. 1, 1971, 10-14.
- 332. Boytsov, V. F., and S. G. Slyusarev. Expansion of the density operator of a quantum e-m field by correlation functions. VLU, Seriya 4. Fizika, khimiya, no. 1, 1971, 101-110.
- 333. Chaplik, A. V. Energy spectrum and electron scattering in inverted levels. ZhETF, v. 60, no. 5, 1971, 1845-1852.
- 334. Chekalinskaya, Yu. I., and A. P. Chechenina. Calculating a regenerative laser with nonuniform line broadening. Vestsi AN BSSR. Seriya fizika-matematichnykh navuk, no. 3, 1971, 88-96.
- 335. Farkas, G. Higher order coherence effects of laser light on the photoelectron distribution detected by third order photoeffect. Acta physica academiae scientiarum hungaricae, v. 29, no. 4, 1970, 415-417.
- 336. Gorshkova, L. D., V. A. Gorshkov, and I. V. Podmoshenskiy. Feasibility of emission from an  $Al_2O_3$  plasma. ZhPS, v. 14, no. 4, 1971, 605-609.
- 337. Ingarden, R. S. An information-theoretical approach to the theory of lasers. Bulletin de l'Academie Polonaise des Sciences, Serie des Sciences Mathematiques, Astronomiques, et Physiques, v. 19, no. 1, 1971, 77-82.
- 338. Janossy, L., and M. Janossy. The laser. Magyar tudomany, no. 2, 1971, 17-24.
- 339. Karlov, N. V. Sensitivity of laser amplifiers. KSpF, no. 3, 1971, 3-8.

340. Khanin, Ya. I. Mode locking in lasers. ZhETF, v. 60, no. 4, 1971, 1282-1290.
341. Kharitonov, Yu. Ya., and Yu. S. Varshavskiy. Third All-Union seminar on the application of vibrational spectra in the study of inorganic and coordination compounds. Zhurnal neorganicheskoy khimii, no. 5, 1971, 1465-1467.
342. Kovalev, A. S. Amplitude fluctuations in two-level and four-level laser models. IVUZ Radiofiz, no. 6, 1971, 823-827.
343. Krasovitskiy, V. B. Accelerating a modulated beam of charged particles in a medium with an inverted population level. ZhTF, no. 6, 1971, 1093-1102.
344. Krylov, K. I. Optics and radio technology. IN: Leningradskiy institut tochnoy mekhaniki i optiki. Trudy. No. 67, 1970, 5-22. (RZhF, 4/71 #4D803).
345. Malakhov, A. N., and M. S. Sandler. Investigation of incoherent laser fluctuations with allowance for parameter variations. IVUZ Radiofiz, no. 6, 1971, 845-853.
346. Nagibarov, V. R., V. A. Pirozhkov, and V. V. Samartsev. Stimulated optical induction and nonhomogeneous broadening of resonance spectral lines. UFZh, no. 4, 1971, 676-677.
347. Samson, A. M., N. A. Klyukanova, and L. A. Kotomtseva. Forming transverse laser modes from noise in the pre-generation interval. ZhPS, v. 14, no. 5, 1971, 809-814.
348. Sokolovskiy, R. I. Radiative shift of emission frequency in a resonance medium. ZhETF, v. 60, no. 5, 1971, 1611-1613.
349. Soskin, M. S. Tunable-frequency lasers and studies of condensed media by means of stimulated emission. Visnyk AN UkrRSR, no. 4, 1971, 7-16.
350. Stankowski, J. Conference on magnetic resonance and quantum electronics. Elektronika, no. 6, 1970, 251-252. (RZhF, 4/71, #4D559).

351. Vetchinkin, S. I. Problems in quantum chemistry (Meeting in Moscow). VAN, no. 5, 1971, 126-127.
352. Vlasov, S. N., V. I. Talanov, and A. I. Khizhnyak. Calculation of space-time characteristics of laser emission. IVUZ Radiofiz, no. 6, 1971, 828-839.
353. Vrbova', M. Solution of the density matrix equation for a single laser optical mode. Czechoslovak Journal of Physics, B20, no. 9, 1970, 959-962. (RZhF, 4/71, #4D948).
354. Zakharov, S. M., and E. A. Manykin. Photon echo in double radio-optical resonance. ZhETF, v. 60, no. 5, 1971, 1867-1877.
355. Zel'dovich, Ya. B., and A. A. Ovchinnikov. Overpopulation of highly excited vibrational levels in a cold lattice. ZhETF P, v. 13, no. 11, 1971, 636-639.

## II. LASER APPLICATIONS

### A. BIOLOGICAL EFFECTS

356. Naprstek, Z. Using differently focused laser beams in experimental and clinical surgery. IN: Sbornik. Dostizheniya meditsinskoy i biologicheskoy tekhnikoy. Moskva, Izd-vo meditsina, 1971. 35-37. (RZh Radiot, 6/71, #6D425).
357. Zhokhov, V. P., V. A. Syngayevskaya, O. S. Ignat'yeva, and G. F. Sinenko. Biochemical shifts in eye tissue from the effect of laser radiation. Oftal' mologicheskiy zhurnal, no. 4, 1971, 273-277.

## B. COMMUNICATIONS

### 1. Beam Propagation in the Atmosphere

- 358. Bazhenov, V. A. Selecting approximate expressions for computing spectral absorption by atmospheric gases. Leningradskiy elektrotekhnicheskiy institut. Izv. No. 94, 1970, 28-30. (RZhKh, 19ABV, 1971, #11B177).
- 359. Bukatyy, V. I., and S. S. Khmelevtsov. Investigation of the microstructure of artificial fogs by the small scattering angles method. FAiO, no. 5, 1971, 542-544.
- 360. Bushmakova, O. V., E. P. Zege, and I. L. Katsev. Asymptotic formulas for brightness coefficients of thick-layer scattering media. DAN BSSR, no. 4, 1971, 309-311.
- 361. Dolin, L. S., and V. A. Savel'yev. Characteristics of backscatter signal from pulsed radiation of a narrow directional optical beam through a turbid medium. FAiO, no. 5, 1971, 505-510.
- 362. Gochelashvili, K. S. Saturation of focused radiation fluctuations in a turbulent medium. IVUZ Radiofiz, no. 4, 1971, 592-596.
- 363. Gusev, V. D., and L. I. Prikhod'ko. Shift of confined beams upon reflection from a regular inhomogeneous medium with fluctuations in dielectric constant. VMU, no. 3, 1971, 344-346.
- 364. Klyushin, Ye. B. Axial mode dispersion of a gas laser in the atmosphere. IN: Sbornik. Proyektirovaniye. No. 2. Moskva, 1970, 13-15. (RZhRadiot, 5/71, #5D483).
- 365. Rvachev, V. P. Optical modeling of some geophysical problems. FAiO, no. 5, 1971, 545-551.
- 366. Shvidkovskiy, Ye. G., V. M. Zakharov, O. K. Kostko, V. M. Orlov, V. A. Torgovichev, E. A. Chayanova, and V. P. Fadina. Determining parameters of the ground layer atmosphere by means of a ground-based lidar. FAiO, no. 4, 1971, 404-409.



- 367. Varakshin, V. P. Method for determining atmospheric transparency. Otkr izobr, no. 13, 1971, 198. Author's Certificate #300861.
- 368. Vlasova, T. G., F. A. Markus, and A. M. Cheremukhin. Measuring the coherence function of an optical beam propagating in the atmosphere. IVUZ Radiofiz, no. 6, 1971, 876-879.
- 369. Vorob'yev, V. V. Average intensity of an optical beam in a weakly nonlinear turbulent atmosphere. IVUZ Radiofiz, no. 6, 1971, 865-875.
- 370. Zuyev, V. Ye. Eighth All-Union Conference on Atmospheric Optics and Actinometry (Tomsk-Novosibirsk, June 22-July 1, 1970). FAiO, no. 3, 1971, 363-365.
- 371. Zuyev, V. Ye., V. V. Sokolov, and S. D. Tvorogov. Calculating the volumetric attenuation coefficients for radiation in clouds and fog in the 0.3-25 micron range. IVUZ Fiz, no. 4, 1971, 73-77.

## 2. Beam Propagation in Liquid

- 372. Artamonov, V. G. Effect of temperature on relaxation of optical anisotropy in liquid benzol. IN: Sbornik. Sovremennyye problemy fizicheskoy khimii. V. 5. Moskva, Moskovskiy universitet, 1970. 280-283. (RZhKh, 19 ABV, 1971, #11B365).
- 373. Artamonov, V. G., A. T. Akhmetov, and V. A. Zamkov. Temperature dependence of the Brillouin component in liquids. IN: Sbornik. Sovremennyye problemy fizicheskoy khimii. V. 5. Moskva, Moskovskiy universitet, 1970, 275-279. (RZhKh, 19 ABV, 1971, #11B610).
- 374. Kadyshevich, Ye. A., Yu. S. Lyubovtseva, and I. N. Plakhina. Measurement of the optical scattering matrixes of sea water. FAiO, no. 5, 1971, 557-561.
- 375. Kutateladze, S. S., and D. I. Avaliani. Attenuation of an optical beam in turbulent pulsations. DAN SSSR, v. 198, no. 5, 1971, 1058-1059.

376. Timofeyeva, V. A. Coefficient of diffuse reflection and its relation to optical parameters of a turbid medium. *FAiO*, no. 6, 1971, 688-691.

### 3. Systems

377. Arkad'yev, D. I., B. M. Milinkis, I. G. Mindlin, and V. L. Khaykin. Equipment for transmitting television by laser. *TKiT*, no. 4, 1971, 60-62.
378. Dogadkin, A. B., and R. F. Matveyev. Modeling long-range optical transmission lines in polygonal configurations. IN: *Sbornik. Aerotermooptika i lucevody*. Minsk, 1970, 3-13. (*RZhRadiot*, 3/71, #3D525).
379. Grigor'yev, V. M. Effect of transmitted pulse delay on accuracy of optical DME's in measuring the lower boundary altitude of clouds. IN: *Nauchno-issledovatel'skiy institut gidrometeorologicheskogo priborostroyeniya. Trudy*. No. 24. Moskva, Gidrometeoizdat, 1971, 45-47.
380. Grigor'yev, V. M., and L. V. Grishchenko. Questions on the use of semiconductor lasers to measure lower boundary altitude of clouds. IN: *Nauchno-issledovatel'skiy institut gidrometeorologicheskogo priborostroyeniya. Trudy*. No. 24. Moskva, Gidrometeoizdat, 1971, 35-44.
381. Khaykin, N. Sh., and B. V. Yurist. Study of the sensitivity threshold of an optically heterodyned receiver. *RiE*, no. 3, 1971, 373-378.
382. Kokurin, Yu. L., and L. A. Vedeshin. Franco-Soviet experiment in laser ranging of the Moon. *VAN*, no. 6, 1971, 33-38.
383. Kovalevskiy, V. G., V. N. Bol'shov, and V. G. Chertov. Method for measuring transmissibility fluctuation of a laser in a section of a gas light pipe. IN: *Sbornik. Aerotermooptika i lucevody*. Minsk, 1970. 14-23. (*RZhRadiot*, 3/71, #3D529).

384. Maslennikov, A. S. Optical ranging measurements in the Antarctic. IN: Sovetskaya antarkticheskaya ekspeditsiya. Trudy, v. 54. Leningrad, Gidrometeoizdat, 1971. 269-275. (RZhGeod, 6/71, #6.52.61).
385. Maslennikov, A. S., N. N. Odinev, V. F. Khomaza, and V. B. Enman. Experiment in high-precision optical ranging in mountain regions. GiK, no. 2, 1971, 16-20.
386. Milinkis, B. Conference on information transmission by laser radiation. Elektrosvyaz', no. 3, 1971, 80.
387. Miroshnikov, M. M., Ye. Ya. Karizhenskiy, B. V. Shilin, and N. A. Gusev. Thermovision in aerial studies of natural resources. OMP, no. 3, 1971, 3-9.
388. Navara, P., T. Daricek, K. Hamal, and A. Novotny. Laser ranging equipment at Ondrejov Observatory. Bulletin of the Astronomical Institutes of Czechoslovakia, v. 22, no. 3, 1971, 124-127.
389. Popov, Yu. V. Effect of modulation nonlinearity characteristics on phase errors in lidars. OMP, no. 4, 1971, 13-17.
390. Popov, Yu. V., and B. I. Utenkov. Features of the application of a photomultiplier with an externally modulated electrode in optical DME's. OMP, no. 5, 1971, 53-56.
391. Raskutin, S. A. Amplification of surface waves in dielectric light pipes. RiE, no. 12, 1970, 2527-2532.
392. The "Signal-2" laser. NTO SSSR, no. 4, 1971, 36.
393. Skavronskiy, V. N. Seminar on the application of optical and radio DME's. GiK, no. 3, 1971, 74-77.
394. Spesanskiy, K. Ye. The laser reflector on Lunokhod-1. Zemlya i vselennaya, no. 3, 1971, 57-58.
395. Terpugov, A. F., and A. A. Kharitonenko. Determining arrival time of lidar signals at a photoelectric receiver. I. IN: Sibirskiy fiziko-tekhnicheskii institut pri Tomskom universitete. Trudy. No. 51, 1970. 157-169. (RZhRadiot, 6/71, #6D417).

396. Terpugov, A. F., and A. A. Kharitonenko. Determining arrival time of lidar signals at a photoelectric receiver. II. IN: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom universitete. Trudy. No. 51, 1970, 170-178. (RZhRadiot, 6/71, #6D418).
397. Terpugov, A. F., S. A. Pottosina, and A. A. Kharitonenko. Suboptimal algorithms for post-detection processing of optical ranging signals in the photon-count mode for determining target range. Part I. Radiotekhnika, no. 2, 1971, 7-14.
398. Travin, G. A. Characteristics of optical ranging. Vestnik protivovozdushnoy oborony, no. 5, 1971, 75-77.
399. Vasileva, M. Effect of physico- geographic and climatic conditions on the measurement accuracy of the EOS DME. Glavnoye upravleniye geodezii i kartografii. Izv. No. 2, 1970, 43. (RZhGeod, 6/71, #6.52.65).

#### 4. Theory of Propagation

400. Artem'yev, A. V., and A. S. Gurvich. Experimental study of coherence function spectra. IVUZ Radiofiz, no. 5, 1971, 734-738.
401. Askar'yan, G. A., V. G. Mikhalevich, and G. P. Shipulo. Aureole refraction and nonlinear scattering of intense light by inhomogeneities in transparent media. UFN, v. 104, no. 2, 1971, 334-335.
402. Barabanenkov, Yu. N. Depth regime of an electromagnetic field in a scattering medium. IVUZ Radiofiz, no. 6, 1971, 887-891.
403. Bubnov, V. A., and O. G. Martynenko. Hydrodynamic and thermal calculations of a gas lens. IN: Sbornik. Aerothermooptika i luchebody. Minsk, 1970. 162-173. (RZhRadiot, 3/71, #3D516).
404. Bukatyy, V. I., and Yu. D. Kopytin. Effect of optical pressure on the transparency of a polydispersed aerosol. IVUZ Fiz, no. 6, 1971, 91-94.

405. Chertov, V. G., and A. M. Zhilkin. Method of measuring the optical characteristics of gas lenses. IN: Sbornik. Aerotermooptika i lucevody. Minsk, 1970. 70-76. (RZhRadiot, 3/71, #3D519).
406. Gertsenshteyn, F. E. Calculating beam trajectory in a gas light pipe. IN: Sbornik. Aerotermooptika i lucevody. Minsk, 1970. 90-100. (RZhRadiot, 3/71, #3D515).
407. Gertsenshteyn, F. E. Basic theory of the electrodynamic gas lens. IN: Sbornik. Aerotermooptika i lucevody. Minsk, 1970. 124-137. (RZhRadiot, 3/71, #3D517).
408. Il'ich, G. K., I. L. Katsev, and V. D. Kozlov. Evaluating the parameters of harmonically modulated optical signals reflected from a scattering medium. FAiO, no. 6, 1971, 674-677.
409. Kapustin, A. A., G. B. Yatsevich, and V. N. Razumovskiy. Calculating energy backscatter in scanning a diffusely scattering surface with a laser beam. IVUZ Priboro, no. 10, 1970, 95-98. (RZhF, 5/71, #5D911).
410. Klyatskin, V. I. Asymptotic behavior in the intensity fluctuations of a plane optical wave propagating in a turbulent medium. ZhETF, v. 60, no. 4, 1971, 1300-1305.
411. Klyatskin, V. I., and V. I. Tatarskiy. Beam diffusion in a medium with random irregularities. IVUZ Radiofiz, no. 5, 1971, 706-717.
412. Kolovandin, B. A., O. G. Martynenko, and V. Ye. Ayerov. Effect of rotation on optical beam propagation through a clear turbulent gas medium in a round tube. IN: Sbornik. Aerotermooptika i lucevody. Minsk, 1970. 48-69. (RZhRadiot, 3/71, #3D523).
413. Kozlov, V. D., and A. F. Timofeyev. Determining relative change in modulation depth in a received back-scattered optical signal. ZhPS, v. 14, no. 5, 1971, 898-901.

414. Naumenko, Ye. K., and A. P. Prishivalko. Sensitivity of attenuation and scattering coefficients to changes in optical constants of particles in a polydisperse medium. ZhPS, v. 14, no. 3, 1971, 494-501.
415. Pelinovskiy, Ye. N. Absorption of nonlinear waves in dispersive media. ZhPMTF, no. 2, 1971, 68-71.
416. Polyanskiy, V. K., and I. B. Kotlyarova. Cooperative effects in radiation propagating over a rough surface. OiS, v. 30, no. 6, 1971, 1142-1145.
417. Romanova, L. M. Effective dimensions of the luminous spot on the boundary of a thick turbid medium illuminated by a narrow optical beam. FAiO, no. 4, 1971, 410-420.
418. Tatarskiy, V. I. Probability distribution for beams in a medium with random inhomogeneities. IVUZ Radiofiz, no. 6, 1971, 960-962.
419. Tsibulya, A. B. A ray model for calculating laser beams. IN: Sbornik. Aerotermooptika i luchebody. Minsk, 1970. 77-89. (RZhF, 5/71, #5D924).
420. Tvorogov, S. D., and V. V. Fomin. Theory of far wing spectral line contour. OiS, v. 30, no. 3, 1971, 413-420.
421. Yemel'yanov, V. P., and A. P. Khapalyuk. Interaction of two plane waves in a nonlinear cubic medium. ZhPS, v. 14, no. 6, 1971, 1012-1019.

C. COMPUTER TECHNOLOGY

- 422. Arutyunov, G. K., and Yu. A. Dzhagarov. Optoelectronic logic element. Otkr izobr, no. 13, 1971, 199. Author's Certificate #300867.
- 423. Bekker, Ya. M. Using laser radiation for miniaturization of memory elements. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Mikroelektronika. No. 5 (26), 1970. 35-39. (RZhAvtomatika, 6/71, #6B284).
- 424. Bogdankevich, O. V., A. S. Nasibov, A. A. Novikov, A. N. Pechenov, V. B. Fedorov, and V. V. Tsvetkov. Possible applications of a semiconductor laser with electron-beam pumping in computer devices. RiE, no. 5, 1971, 824-828.
- 425. Grigor'yev, A. G., and V. B. Dmitriyev. Transparent memory. Khimiya i zhizn', no. 4, 1971, 49-50.
- 426. Vul', V. A., and S. A. Konovalova. Electrooptic devices for information processing. Avtomatika i vychislitel'naya tekhnika, no. 1, 1971, 71-77.

#### D. HOLOGRAPHY

- 427. Aksenichikov, A. P., and A. A. Komlev. Diffraction effectiveness of a phase hologram formed by surface deformation. IN: Kvantovaya elektronika. Sbornik statey. No. 1, Moskva, Sovetskoye radio, 1971. 141-143.
- 428. Andreyeva, O. V., and V. I. Sukhanov. Obtaining unbleached three-dimensional holograms with high diffraction efficiency. OiS, v. 30, no. 4, 1971, 786-787.
- 429. Aristov, V. V., and V. Sh. Shekhtman. Properties of three-dimensional holograms. UFN, v. 104, no. 1, 1971, 51-76.
- 430. Ashcheulov, Yu. V., and V. I. Sukhanov. Activation process of photochromic glass as a preliminary stage for recording three-dimensional holograms. OiS, v. 30, no. 6, 1971, 1148-1151.
- 431. Belogorodskiy, B. A., Ye. P. Smirnov, Yu. G. Turkevich, and Ye. I. Kheyfets. Study of acoustic fields by means of optical holography. Akusticheskiy zhurnal, no. 2, 1971, 303-305.
- 432. Belozerov, A. F., and N. M. Spornik. Processing of shadow photographs in the reconstruction of a wavefront from a hologram in white light. OMP, no. 3, 1971, 9-11.
- 433. Belozerov, A. F., A. K. Betekova, Yu. Ye. Kuzilin, and E. S. Zimin. Holographic interferometer. Author's Certificate, USSR. No. 266103, published July 28, 1970. (RZhMetrolog, 3/71, #3.32.1391).
- 434. Butusov, M. M., V. Ya. Demchenko, and Yu. G. Turkevich. A holographic stroboscope based on a ruby laser with passive Q-switching. PTE, no. 2, 1971, 203-204.
- 435. Buynov, G. N., N. P. Larionov, A. V. Lukin, K. S. Mustafin, and R. A. Rafikov. Holographic interference control of aspherical surfaces. OMP, no. 4, 1971, 6-11.
- 436. Denisjuk, Yu. N. Principles of holography. VAN, no. 3, 1971, 48-55.



437. Denisyuk, Yu. N., R. R. Gerke, and D. I. Stasel'ko. Method for controlling transverse modes in lasers. Author's Certificate, USSR. No. 276270, published Oct. 22, 1970. (RZhF, 6/71, #6D1035).
438. Denisyuk, Yu. N., N. M. Ramishvili, and V. V. Chavchanidze. Producing spatial images of two-dimensional objects without lenses or holography. OiS, v. 30, no. 6, 1971, 1130-1134.
439. Dobyryn, V. V., B. G. Turukhano, and N. Turukhano. Measurement properties of a combined interference field and sinusoidal holographic diffraction grating. OiS, v. 30, no. 3, 1971, 550-555.
440. Dubrov, M. N., and A. B. Shereshev. Holographic method for analyzing beamed waves in quasioptic transmission lines. IN: Sbornik. Aerotermooptika i luchebody. Minsk, 1970. 101-123. (RZhRadiot, 3/71, #3D522).
441. Frolov, V., and Yu. Soluyanov. Holography and its application to aviation and cosmonautics. Aviatsiya i kosmonavtika, no. 5, 1971, 44-45.
442. Gershman, V. 3-D image on photofilm. Nauka i tekhnika, no. 3, 1971, 21-25.
443. Gusev, O. B., and V. B. Konstantinov. Method of determining frequency-contrast characteristics of holographic systems. ZhTF, no. 1, 1971, 222-226.
444. Ignatov, A. B., I. I. Komissarova, G. V. Ostrovskaya, and L. L. Shapiro. Holographic study of a laser spark. III. Sparks in hydrogen and helium. ZhTF, no. 4, 1971, 701-708.
445. Kakichashvili, Sh. D. Duplication of moving picture 3-D holograms. TKiT, no. 3, 1971, 17-18.
446. Kalestynski, A., and B. Smolinska. Deformation of holographic images. Acta physica polonica, A38, no. 3, 1970, 413-428. (RZhF, 6/71, #6D1073).

447. Karczewski, B. Holography and its application. Elektronika, no. 4, 1971, 145-150.
448. Kirillov, N. N., N. V. Vasil'yeva, and V. L. Zelikman. Obtaining a concentrated photoemulsion by alternate freezing and thawing. ZhNiPFIK, no. 6, 1970, 441-443.
449. Kondurova, L. N., and A. I. Smirnov. Feasibility of holographic study of periodic microobjects. ZhTF, no. 5, 1971, 1043-1047.
450. Kotosonov, M. V., I. A. Khripchenko, Ye. A. Chernov, and O. A. Sviridova. Resolution of thermal holograms. IN: Sbornik. Radiofizika i mikroelektronika. Voronezh, 1970, 40-46. (RZhRadiot, 6/71, #6D421).
451. Lasers serve the police. VDNKh SSSR, no. 6, 1971, 36.
452. Markus, F. A., and Ye. I. Filatova. Intensity fluctuations in the image plane of certain optical systems. IVUZ Radiofiz, no. 2, 1971, 269-275.
453. Mikaelyan, A. L., V. I. Bobrinev, E. Kh. Gulanyan, and G. N. Akimova. Multiple recording of holograms with an extended-source reference beam. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971, 143-145.
454. Mikaelyan, A. L., V. I. Bobrinev, A. A. Aksel'rod, S. M. Naumov, M. M. Koblova, E. A. Zasovin, K. I. Kushtanin, and V. V. Kharitonov. Holographic memories for mass information recording. IN: Kvantovaya elektronika. Sbornik statey. No. 1, Moskva, Sovetskoye radio, 1971, 79-84.
455. Mikaelyan, A. L., N. G. Nakhodkin, V. I. Bobrinev, E. Kh. Gulanyan, A. K. Stolyarov, A. P. Aksenchikov, N. G. Kuvshinskiy, and A. A. Kostyuk. Registering holograms in photopolymers. IN: Kvantovaya elektronika. Sbornik statey. No. 1. Moskva, Sovetskoye radio, 1971. 145-146.
456. Mumladze, V. V., N. M. Ramishvili, V. V. Chavchanidze, and T. D. Ebralidze. Arbitrary change in reconstruction distance by means of multiple holography. ZhTF, no. 2, 1971, 424-427.

457. Mustafin, K. S., V. I. Protasevich, and V. N. Rzhevskiy. Determining radial temperature distribution of atoms in a positive xenon discharge column. *OiS*, v. 30, no. 3, 1971, 406-408.
458. Ostrovskiy, Yu. I. Interference resolvometry. IN *Leningradskiy gornyy institut. Zapiski*, v. 51, no. 3, 1970, 136-142. (*RZhFotokinotekhnika*, 4/71, #4.46.68).
459. Parshin, P. F., and A. A. Chumachenko. Holographic spectroscopy. *UFN*, v. 103, no. 3, 1971, 553-558.
460. Ruzanova, B. Hologram studied through a microscope. *APN Newsletter. Science and Engineering*, no. 21(484)-A, June 4, 1971, 4.
461. Shmakov, P. V., B. G. Zhebel', V. Ye. Dzhakoniya, P. M. Kopylov, and A. N. Tachkov. Forming synthesized holograms in reconstruction systems of 3-D images. *Elektrosvyaz'*, no. 1, 1971, 7-11.
462. Stabnikov, M. V., and M. Sh. Tombak. Study of the development of electric spark breakdown in air by a holographic method. *ZhTF*, no. 6, 1971, 1310-1315.
463. Stepanov, B. I., Ye. V. Ivakin, and A. S. Rubanov. Registering plane and 3-dimensional dynamic holograms with bleachable materials. *DAN SSSR*, v. 196, no. 3, 1971, 567-569.
464. Voskoboynik, G. A., I. S. Gibin, V. P. Koronkevich, Ye. S. Nezhevenko, P. Ye. Tverdokhleby, and Yu. V. Chuguy. Device with a holographic memory for identifying substances according to their infrared spectra. *OiS*, v. 30, no. 6, 1971, 1152-1156.
465. Zubov, V. A., A. V. Krayskiy, and T. I. Kuznetsova. Holographic registry of nonstationary processes. *ZhETF P*, v. 13, no. 8, 1971, 443-446.

## E. INSTRUMENTATION AND MEASUREMENTS

### 1. Measurement of Laser Parameters

- 466. Arpishkin, V. M., V. R. Muratov, and G. G. Toropova. Applicability of the inverse square law for lasers. OMP, no. 2, 1971, 61-62.
- 467. Bykovskiy, Yu. A., N. N. Degtyarenko, V. F. Yelesin, Yu. P. Kozyrev, and S. M. Sil'nov. Mass-spectrometric study of a laser plasma. ZhETF, v. 60, no. 4, 1971, 1306-1319.
- 468. Bykovskiy, Yu. A.; V. L. Velichanskiy, I. G. Goncharov, V. A. Maslov, V. V. Nikitin, and V. L. Smirnov. Using a semiconductor laser spectroscopy to measure the hyperfine structure of  $6S_{1/2}$   $6P_{1/2}$   $6P_{3/2}$   $Cs^{133}$  I. KSpF, no. 3, 1971, 22-28.
- 469. Chekalinskaya, Yu. I., and A. P. Chechenina. Approximate calculation of laser output power in the case of nonuniform line broadening. IAN B, no. 5, 1970, 94-102. (RZhF, 4/71, #4D961).
- 470. Chirkin, A. S. Two-photon technique for measuring ultrashort optical pulses, and the efficiency of nonlinear optical phenomena. ZhETF, v. 60, no. 5, 1971, 1584-1592.
- 471. Dombi, J., L. Gati, I. Ketskemety, I. Szalma, and L. Vize. Apparatus for measurement of laser pulse energy. Hungarian Technical Abstracts, v. 23, no. 1, 1971, 13.
- 472. Dyachenko, A. A., M. V. Persikov, and O. Ye. Shushpanov. Application of masks with special hole forms to one-dimension mode analysis of quasioptical fields. RiE, no. 5, 1971, 842-844.
- 473. Glotov, V. G. Matrix analysis of a matched optical system for a remote stress sensor. OMP, no. 2, 1971, 11-14.
- 474. Kovrigin, A. I., V. G. Tunkin, and A. I. Kholodnykh. Controlling the optical properties of nonlinear crystals. PTE, no. 2, 1971, 210-212.
- 475. Pen'kovskiy, A. I. Readout device for measuring deflection of an optical beam. Author's certificate, USSR, no. 266266, published July 22, 1970. (RZhMetrolog, 2/71, #2.32.1840P).

- 476. Sukhorukikh, V. S. Shadow method for measuring angular deflection rate of an optical beam. Author's certificate, USSR, no. 269529, published July 8, 1970. (RZhMetrolog, 2/71, #2.32.1841P).
- 477. Tron'ko, V. O., Yu. A. Kuznetsov, and Yu. S. Plaksiy. A method of recording rotation angle in an optical polarization plane. Ois, v. 30, no. 3, 1971, 539-543.
- 478. Verevkin, Yu. K., E. Ya. Daume, A. I. Makarov, M. A. Novikov, and A. I. Khizhnyak. Measuring ultrashort pulse duration. IVUZ Radiofiz, no. 6, 1971, 840-844.
- 479. Wolinski, W., and A. Kazmirowski. Interferometer with concave mirrors for studying laser emission spectra. Elektronika, no. 7-8, 1970, 314-316. (RZhF, 5/71 #5Zh30).
- 480. Zavenyagin, Yu. A., and Yu. P. Dontsov. Calculation of diffraction dispersion of a laser beam in a multiple-beam interferometer. ZhPS, v. 14, no. 3, 1971, 397-401.
- 481. Zimokosov, G. A., A. Ya. Leykin, V. G. Pavlov, and V. S. Solov'yev. Measurement of laser wavelength. IT, no. 6, 1971, 42-43.

## 2. Miscellaneous Measurement Applications

- 482. Anashin, A. M., Ye. P. Gorbunov, D. P. Ivanov, S. Ye. Lysenko, N. D. Pikok (N. J. Peacock), D. Ch. Robinson (D. C. Robinson), V. V. Sannikov, and V. S. Strelkov. Experiments on laser and microwave plasma probing and measurements of the diamagnetic effect on the Tokamak T-3a. ZhETF, v. 60, no. 6, 1971, 2092-2104.
- 483. Angelova, N. V. Producing a visual readout when using laser viewfinders in geodetic engineering operations. GiK, no. 6, 1971, 39-42.
- 484. Barchukov, A. I., Yu. B. Konev, A. M. Prokhorov, and V. S. Terin. Laser amplifier with a periodic beam-amplifying structure, operating at  $10.6\mu$ . RiE, no. 6, 1971, 996-1004.

485. Besshaposhnikov, A. A., G. G. Zukakishvili, I. Kh. Kuchuberiya, and N. V. Simonova. Single-beam Schlieren oscillography of a pulsed plasma. PTE, no. 2, 1971, 151-153.
486. Bogdan, D. A., and N. A. Demidov. Measurement of hydrogen atom temperature in the source of a hydrogen maser beam. IVUZ Radiofiz, no. 4, 1971, 575-579.
487. Briskina, Ch. M., V. V. Grigor'yants, M. Ye. Zhabotinskiy, V. M. Markushev, and N. V. Otradinskaya. A luminescence method for determining excitation propagation rate among ions, using a free-running laser. IN: Sbornik. Peredacha energii v kondensirovannykh sredakh. Yerevan, 1970, 83-90. (RZh Radiot, 5/71, #5D448).
488. Bykovskiy, Yu. A., V. L. Velichanskiy, I. G. Goncharov, V. A. Maslov; and V. V. Nikitin. A pulsed semiconductor laser as a high resolution spectroscopy. OiS, v. 30, no. 3, 1971, 508-510.
489. Demidov, N. A., and V. A. Logachev. Investigation of methods of tuning a hydrogen maser resonator at the peak of the spectral line. IVUZ Radiofiz, no. 5, 1971, 690-697.
490. Deryugin, I. A., V. S. Abalakin, and V. I. Shevchenko. Luminescence in Se- and CdS-tinted glasses under two-photon excitation. IN: Moskovskiy gosudarstvennyy pedagogicheskiy institut. Uchenyye zapiski. No. 391, 1970, 252-254. (RZhF, 4/71, #4D751).
491. Dolgov, V. V., Yu. N. D'yakov, A. S. Valeyev, and V. I. Zhukov. Method of determining stress in film materials on a substrate. Otkr izobr, no. 10, 1971, 138, Author's Certificate #297860.
492. Drozdetskiy, V. Ye., D. B. Levitan, S. N. Pylinina, and V. N. Shakhtarin. Superconductive magnetic systems for traveling-wave masers. IN: Sbornik. Nekotoryy voprosy issledovaniya gazo-razryadochnoy plazmy i sozdaniya sil'nykh magnitnykh poley. Leningrad, Izd-vo nauka, 1970, 159-167. (RZhF, 5/71, #5Zh36).

493. Fabelinskiy, I. L. New optical methods for the study of rapidly occurring processes. UFN, v. 104, no. 1, 1971, 77-94.
494. Glowacki, A., and Z. Warczewski. First Polish commercial application of a gas laser for control of mining operations. Przegląd geodezyjny, no. 11, 1970, 466-471. (RZhF, 6/71, #6D1063).
495. Golovin, V. A., N. P. Konyayeva, B. S. Rinkevichyus, and G. M. Yanina. Study of two-phase flow models by means of a laser. TVT, no. 3, 1971, 606-610.
496. Golubkova, V. P., and V. P. Koronkevich. Dual laser interferometer for determining object locations. OMP, no. 4, 1971, 29-31.
497. Gorelik, V. S., M. M. Sushchinskiy, and A. Ye. Novik. Using an argon laser to study optical Raman scattering. PTE, no. 2, 1971, 205-207.
498. Gorshkov, A. S., V. F. Marchenko, and A. F. Tselykovskiy. Experimental measurement of amplitude corrections to the propagation velocity of capillary waves. Zh PMTF, no. 2, 1971, 164-166.
499. Grechinskiy, D. A., I. Ya. Mansurov, and V. G. Rygalin. Photoelectric displacement meter. Otkr izobr, no. 9, 1971, 160, Author's Certificate #297062.
500. Kaczmarek, F. Ten years of lasers. Elektronika, no. 1, 1971, 7-14.
501. Klepaczko, J., and M. Korzun. Using a laser to measure particle velocity at a shock wavefront. Biuletyn WAT J. Dabrowskiego, no. 11, 1970, 113-121. (RZhF, 5/71, #5D957).
502. Kontsevoy, Yu. A., R. R. Rezvy, V. M. Gololobov, and Ye. N. Kudryavtsev. Ellipsometric control method using a laser. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskii sbornik. Upravleniye kachestvom i standartizatsiyey. (RZhF, 6/71, #6D1057).

503. Kosyrev, Y. The laser: today and tomorrow. Soviet Military Review, no. 5, 1971, 26-28.
504. Krivchikova, E. P., and V. S. Demin. Use of a laser in atomic-absorption analysis. ZhPS, v. 14, no. 4, 1971, 592-596.
505. Landa, P. S. Limit of sensitivity for a laser gyroscope. OIS, v. 30, no. 5, 1971, 976-977.
506. LEM-1 ellipsometric laser microscope. VDNKh SSSR, no. 5, 1971, 10.
507. Letokhov, V. S., and S. L. Mandel'shtam. Problems in laser spectroscopy. VAN, no. 3, 1971, 40-47.
508. Malyshev, Yu. M., V. M. Tatarenkov, and A. N. Titov. Optical frequency standard with beam absorption cells. ZhETF P, v. 13, no. 11, 1971, 592-595.
509. Malyutin, A. A., V. V. Rybakov, S. G. Starostin, A. K. Subbotin, and S. N. Ushanov. Diagnostic complex with a laser interferometer for measuring electron concentration in a stationary plasma jet. PTE, no. 3, 1971, 167-168.
510. Misezhnikov, G. S., M. M. Mukhina, and V. B. Shteynshleyger. T-w maser in the 5 cm band with an extended bandpass. PTE, no. 3, 1971, 138-139.
511. Mykityuk, V. I., and A. A. Solomko. Laser study of YIG domain structure. FTT, no. 6, 1971, 1545-1549.
512. Naydenov, Kh. Accuracy of the EOS optical DME. Glavnoye upravleniye geodezii i kartografii. Izv. No. 2, 1970, 32-35. (RZhGeod, 6/71, #6.52.64).
513. Petrov, A. A., and G. V. Skvortsova. Using a laser for spectral-isotopic determination of surface and volumetric content of oxygen in metals. ZhPS, v. 14, no. 5, 1971, 793-800.



514. Popkov, Yu. A., V. I. Fomin, and L. T. Kharchenko. Brillouin scattering in  $\text{KMnF}_3$ ,  $\text{RbMnF}_3$ , and  $\text{MnF}_2$  crystals. FTT, no. 6, 1971, 1626-1630.
515. Ryskin, V. S., M. A. Gezalov, V. S. Kuksenko, V. A. Marikhin, and A. I. Slutsker. Study of submicroscopic cracks by diffraction methods. FTT, no. 3, 1971, 784-788.
516. Sofronov, Yu., and Ya. Sukhonov. Lasers on the battlefield. Serzhant, no. 5, 1971, 24-26.
517. Soloukhin, R. I., and Yu. A. Yakobi. Relaxation processes in a Michelson laser interferometer with phase Q-switching. DAN SSSR, v. 198, no. 6, 1971, 1320-1322.
518. Vlasov, Yu. N., and A. M. Trokhan. Using optical marks to measure velocity fields in liquid flow. TVT, no. 3, 1971, 650-652.
519. Volpyanskiy, A. Ye., V. I. Zabelyshenskiy, M. I. Iglitsyn, K. K. Kolosovskiy, A. G. Lagutin, M. G. Kosaganova, and V. B. Dorofeyeva. Device for displaying optical discontinuities in transparent objects. Otkr izobr, no. 14, 1971, 137. Author's Certificate No. 301601.
520. Voronin, E. S., M. I. Divlekeyev, Yu. A. Il'inskiy, V. S. Solomatin, V. V. Badikov, and A. A. Godovikov. Viewing objects illuminated by 10.6 micron emission. IN: Kvantovaya elektronika. Sbornik statey. No. 1, Moskva, Sovetskoye radio, 1971, 151-153.
521. Yermolayev, G., and L. Murzin. Laser leading marks for the maritime fleet. Morskoy flot, no. 2, 1971, 24-25.
522. Zhitnikov, R. A., and P. P. Kuleshov. Optically pumped laser magnetometer with self-oscillation at the Larmor frequency. Otkr izobr, no. 13, 1971, 249, Author's Certificate No. 297321.

## **F. MATERIALS PROCESSING**

### **1. Nonlinear Surface Processing**

523. Kartavov, S. A., V. S. Kovalenko, and Le Van Tien. Determining the depth of holes formed by laser beam. *Tekhnologiya i organizatsiya proizvodstva*, no. 2, 1971, 98.
524. Suminov, V. M., Ye. V. Promys'ov, A. K. Skvorchevskiy, and B. G. Kuzin. Effect of resonator mirror misalignment on geometrical accuracy of (laser-drilled) holes. IN: *Sbornik. Obmen opytom v radiopromyshlennosti*. No. 1, Moskva, 1971, 26-29. (RZhRadiot, 5/71, #5D472).
525. Vysotskiy, V. Z., N. P. Kulikova, and M. P. Petrovskaya. Experiments in using lasers for processing thin films. IN: *Elektronnaya tekhnika. Nauchno-tekhnicheskiy sbornik. Mikroelektronika*. No. 3(24), 1970, 77-81. (RZhRadiot, 3/71, #3D537).

### **2. Beam-Target Interactions**

#### **a. Metals**

526. Arifov, U. A., V. V. Kazanskiy, V. B. Lugovskoy, and Z. A. Kayumova. Integral and spiked ejection caused by laser irradiation. *IAN Fiz*, no. 3, 1971, 599-602.
527. Goncharov, V. K., and L. Ya. Min'ko. Formation of shock wave trains in absorptive materials by means of a laser with a controlled generation regime. *ZhPMTF*, no. 3, 1971, 98-100.
528. Krylov, Yu. K., and S. A. Volkov. Scattering of light by products formed from evaporation of matter by intense e-m radiation. *OiS*, v. 30, no. 3, 1971, 517-523.
529. Petukhova, T. M., and V. F. Senkevich. Pit formation in cast iron from the action of a laser beam. *IVUZ Chernaya metallurgiya*, no. 6, 1971, 138-144.
530. Plyatsko, G. V., M. I. Moysa, and V. M. Zhirovetskiy. Features of the interaction of a laser beam with metals. *F-KhMM*, no. 3, 1971, 50-53.

531. Rykalin, N. N., and A. A. Uglov. Internal vaporization processes from the action of a laser on metal. TVT, no. 3, 1971, 575-582.
  532. Smolin, Yu. Z., and Yu. G. Turkevich. Antimony-cesium cathode emission under radiation from an Nd glass laser. IN: Leningradskiy politekhnicheskii institut. Trudy, no. 311, 1970, 56-58.
  533. Zhiryakov, B. M., N. N. Rykalin, A. A. Uglov, and A. K. Fannibo. Characteristics of destruction processes in metals by focused laser radiation. ZhTF, no. 5, 1971, 1037-1042.
- b. Dielectrics
534. Agranat, M. B., I. K. Krasnyuk, N. P. Novikov, V. P. Perminov, Yu. I. Yudin, and P. A. Yampol'skiy. Destruction of transparent dielectrics by laser radiation. ZhETF, v. 60, no. 5, 1971, 1748-1756.
  535. Aleshin, I. V., A. M. Bonch-Bruyevich, Ya. A. Imas; V. L. Komolov, and V. S. Salyadinov. Surface destruction of type K-8 optical glass. ZhTF, no. 4, 1971, 820-823.
  536. Golodenko, N. N., N. G. Kokodiy, and R. A. Valitov. Boundary stress in a crystal polarized by laser radiation. IN: Elektronnaya tekhnika. Nauchno-tekhnicheskii sbornik. Kontrol'no-izmeritel'naya apparatura. No. 3(21), 1970, 136-141. (RZhF, 5/71, #5D914).
  537. Kalmykov, A. A., G. N. Rozental', and V. A. Rybakov. Surface effects from the action of laser radiation on a transparent dielectric. ZhPMTF, no. 2, 1971, 41-47.
  538. Novikov, N. P., and A. A. Kholodilov. Damage in thermoplastics from the effect of powerful thermal flux. Mekhanika polimerov, no. 1, 1971, 122-130.
  539. Voropay, Ye. S., and A. M. Sarzhevskiy. Luminescence of transparent solids under the effect of laser radiation. ZhPS, v. 14, no. 3, 1971, 534-536.

c. Semiconductors

- 540. Adrianova, I. I., A. A. Berezhnoy, and Yu. V. Popov. Evidence of photoeffect in electrooptic crystals of zinc selenide. *OiS*, v. 30, no. 5, 1971, 957-960.
- 541. Arsen'yev, V. V., Ya. T. Vasil'yev, V. S. Dneprovskiy, and V. U. Khattatov. Destruction of CdS crystals by pico-second optical pulses. *FTP*, no. 3, 1971, 403-407.
- 542. Baranovskiy, I. V., A. A. Borshch, M. S. Brodin, and A. M. Kamuz. Self-focusing of ruby laser radiation in CdS crystals. *ZhETF*, v. 60, no. 5, 1971, 1593-1596.
- 543. Belikova, T. P., E. A. Sviridenkov, and L. V. Titova. Study of luminescence flash in ZnS-Cu under ruby laser light. *OiS*, v. 30, no. 5, 1971, 921-926.
- 544. Degtyarenko, N. N., and V. F. Yelesin. Possible instability in a semiconductor under intense optical radiation, caused by triple recombination. *ZhETF P*, v. 13, no. 8, 1971, 456-458.
- 545. Gulyayeva, A. S., B. A. Krasnyuk, V. N. Maslov, and N. V. Troneva. Local dissociation of gallium arsenide from the effect of a laser pulse. *FiKhOM*, no. 3, 1971, 8-12.
- 546. Gurevich, Yu. G., and O. N. Chavchanidze. Strong e-m waves in a semiconductor plate. *FTT*, no. 4, 1971, 1091-1097.
- 547. Kodes, J., and J. Maloch. Effect of a laser beam on selenium rectifiers. *Czechoslovak Journal of Physics*, B20, no. 11, 1970, 1221-1224. (RZhF, 6/71, #6D1027).
- 548. Rubinshteyn, Ye. A. Interaction of e-m waves with semiconductors having an ion lattice. *FTT*, no. 4, 1971, 1105-1110.
- 549. Valov, P. M., B. S. Ryvkin, I. D. Yaroshetskiy, and I. N. Yassiyevich. Intrazonal photoconductivity in n-Ge through optical heating of electrons. *FTP*, no. 5, 1971, 904-910.

550. Zubov, B. V., T. M. Murina, B. R. Olovyagin, and  
A. M. Prokhorov. Study of nonlinear absorption in Ge.  
FTP, no. 4, 1971, 636-640.

d. Miscellaneous Studies

551. Askar'yan, G. A., and V. A. Pogosyan. Thermal track and self-focusing of a powerful beam in a medium. ZhETF, v. 60, no. 4, 1971, 1295-1299.
552. Bass, F. G., and Yu. G. Gurevich. Nonlinear theory of e-m wave propagation in a solid state plasma and gas discharge. UFN, v. 103, no. 3, 1971, 447-468.
553. Bunkin, F. V., N. V. Karlov, B. M. Komissarov, and G. P. Kuz'min. Generation of sound from a laser impulse absorbed by the surface layer of a fluid. ZhETF P, v. 13, no. 9, 1971, 479-483.
554. Chetverushkin, B. N. Numerical solution of a spectral problem in heating of a material by external radiation. ZhPMTF, no. 2, 1971, 48-53.
555. Kulyapin, V. M. Problems of thermal conductivity in phase transitions. I-FZh, no. 3, 1971, 497-504.
556. Mashkevich, V. S. Universal correlation between radiation and absorption probabilities at quasiequilibrium. DAN SSSR, v. 196, no. 6, 1971, 1307-1309.
557. Men', A. A., and O. A. Sergeyev. Beam-conductive heat transfer in a medium with selective optical properties. TVT, no. 2, 1971, 353-359.
558. Poltavtsev, Yu. G., V. P. Zakharov, and V. N. Chugayev. Structural study of graphitization in thin carbon films from powerful optical pulses. Kristall, no. 2, 1971, 415-419.
559. Rykalin, N. N., A. A. Uglov, and N. I. Makarov. Calculating the heating of a film by laser radiation. FiKhOM, no. 2, 1971, 3-8.
560. Safaryan, M. N. Bleaching of molecular gas under laser radiation. OiS, v. 30, no. 4, 1971, 767-775.
561. Uglov, A. A. Seminar on physics and chemistry of materials processing by concentrated energy fluxes (resumé). FiKhOM, no. 2, 1971, 166-167.

562. Yeleonskiy, V. M., and V. P. Silin. Nonlinear theory of penetration of p-polarized waves into a conductor. ZhETF, v. 60, no. 5, 1971, 1927-1937.

**G. PLASMA GENERATION**

563. Aksenov, V. V., M. S. Besspalov, V. M. Yeroshenko, and A. A. Mushinskiy. Experimental determination by laser of electron density and temperature in an argon plasma jet. ZhPS, v. 14, no. 3, 1971, 393-396.
564. Basov, N. G., V. A. Boyko, S. M. Zakharov, O. N. Krokhin, and G. V. Sklizkov. Generating neutrons in a laser CD<sub>2</sub> plasma heated by nanosecond pulses. ZhETF P, v. 13, no. 12, 1971, 691-694.
565. Basov, N. G., S. D. Zakharov, O. N. Krokhin, P. G. Kryukov, Yu. V. Senatskiy, Ye. L. Tyurin, A. I. Fedosimov, S. V. Chekalin, and M. Ya. Shchelev. Studies of plasma formed by ultrashort laser pulses. IN: Kvantovaya elektronika. Sbornik statey, no. 1. Moskva, Sovetskoye radio, 1971, 4-28.
566. Bunkin, F. V., I. K. Krasnyuk, V. M. Marchenko, P. P. Pashinin, and A. M. Prokhorov. Structural study of a spark generated by a focused picosecond laser pulse in gas. ZhETF, v. 60, no. 4, 1971, 1326-1331.
567. Gribkov, V. A., V. Ya. Nikulin, and G. V. Sklizkov. Increasing plasma density by collision of laser flares. KSpF, no. 2, 1971, 45-49.
568. Klavdiyev, V. V. Absorption of an electromagnetic wave by a half-space of magnetoactive plasma. IVUZ Radiofiz, no. 5, 1971, 680-685.
569. Knyazev, I. N. Electron energy and concentration in a pulsed plasma from a molecular nitrogen laser. KSpF, no. 2, 1971, 50-56.
570. Krokhin, O. N., and G. V. Sklizkov. International conference on laser plasma. VAN, no. 4, 1971, 41-44.
571. Litvak, A. G., and V. Yu. Trakhtengerts. Stimulated wave scattering and plasma heating by coherent radiation. ZhETF, v. 60, no. 5, 1971, 1702-1713.



572. Pashinin, P. P., and A. M. Prokhorov. Obtaining a dense high-temperature plasma by laser heating of a special gas target. ZhETF, v. 60, no. 5, 1971, 1630-1636.
573. Preobrazhenskiy, N. G., and T. A. Sharapova. On the optical transparency of a nonequilibrium plasma. TVT, no. 3, 1971, 493-496.
574. Ramazashvili, R. R. Isolated waves in a plasma located in a strong high-frequency field. KSpF, no. 1, 1971, 15-21.
575. Soloukhin, R. I., and Yu. A. Yakobi. Distribution of electron densities in wave processes of a pulse discharge. ZhPMTF, no. 2, 1971, 15-20.
576. Sorokin, Yu. M., and N. S. Stepanov. Reflection and refraction of electromagnetic waves by a moving ionization region. IVUZ Radiofiz, no. 5, 1971, 686-689.
578. Yegorov, V. S., N. M. Zatserkovnyuk, A. A. Pastor, and G. A. Plekhotkin. Interaction of a narrow pulse of super-radiance with a resonant absorptive substance. OiS, v. 30, no. 6, 1971, 1170-1172.
479. Yeremin, B. G., and A. G. Litvak. Observing self-focusing of electromagnetic waves in plasma. ZhETF P, v. 13, no. 11, 1971, 603-607.
580. Yeremin, V. I., L. V. Norinskiy, and V. A. Pryadein. Frequency dependence of optical breakdown threshold in air in the u-v band. ZhETF P, v. 13, no. 8, 1971, 433-436.
581. Zakharov, V. P., I. M. Protas, and V. N. Chugayev. Mass spectrometer study of plasma generated from atomization of ferrite by laser radiation. ZhTF, no. 6, 1971, 1296-1298.

### III. MONOGRAPHS

582. Agabekyan, A. S. (ed.). *Peredacha energii v kondensirovannykh sredakh* (Energy transmission in condensed media). *Trudy I Vsesoyuznogo seminara po bezizluchatel'nym peredacham energii v kondensirovannykh sredakh*. Lori, Armenia, Oct. 6-12, 1969. Yerevan, 1970. 196 p. (RZhRadiot, 5/71, #5D433K).
583. Besshaposnikov, A. A., I. Kh. Kuchuberiya, N. V. Simonova, A. Z. Rakhel'kin, A. A. Arsen'yev, and G. A. Zeytunyan. *Lazernaya ustanovka dlya mnogokanal'noy registratsii spektra izlucheniya lazera, rasseyannogo na elektronakh plazmy* (Laser device for multichannel recording of the emission spectrum of a laser beam scattered by electrons in a plasma). Moskva, 1970. 28 p. (Deposited). (RZhF, 5/71, #5D962 DEP).
584. Kartashev, A. I. (ed.). *Issledovaniya v oblasti opticheskikh i svetovykh izmereniy* (Studies in the areas of optical and luminous measurements). Moskva-Leningrad, Standartizdat, 1970. 176 p. (RZhF, 4/71, #4D805K).
585. Klejman, H., K. Dzieciolowski, and M. Rzewuski. *Lasery w telekomunikacji* (Use of lasers in long-range communications). Warszawa. Wydawn nauk.-techn. 1970. 177 p. (RZhRadiot, 5/71, #5D433K).
586. *Svet gellyi-neonovykh lazеров v biologii i meditsine* (He-Ne laser light in biology and medicine). Kazakhskiy universitet. Alma-Ata, 1970. 79 p. (RZhRadiot, 3/71, #3D503K).
587. Toropkov, N. A. *Complete experiment in holography. Ob'edinnenyy institut yadernogo issledovaniya. Laboratoriya vychislitel'naya tekhnika i avtomatizatsiya*. Preprint, no. E4-5401. Dubna, 1970, 8 p. (RZhF, 6/71, #6D1068).

#### IV. SOURCE ABBREVIATIONS

DAN ArmSSR	-	Akademiya nauk Armyanskoy SSR. Doklady
DAN BSSR	-	Akademiya nauk Belorusskoy SSR. Doklady
DAN SSSR	-	Akademiya nauk SSSR. Doklady
FAiO	-	Akademiya nauk SSSR. Izvestiya. Fizika atmosfery i okeana
FiKhOM	-	Fizika i khimiya obrabotki materialov
F-KhMM	-	Fiziko-khimicheskaya mekhanika materialov
FTP	-	Fizika i tekhnika poluprovodnikov
FTT	-	Fizika tverdogo tela
GiK	-	Geodeziya i kartografiya
IAN B	-	Akademiya nauk Belorusskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk
IAN Fiz	-	Izvestiya AN SSSR. Seriya fizicheskaya
I-FZh	-	Inzhenerno-fizicheskiy zhurnal
IT	-	Izmeritel'naya tekhnika
IVUZ Fiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Fizika
IVUZ Radioelektr	-	Izvestiya vysshikh uchebnykh zavedeniy. Radioelektronika
IVUZ Radiofiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika
KhVE	-	Khimiya vysokikh energiy

Kristall	-	Kristallografiya
KiK	-	Kinetika i kataliz
KSpF	-	Kratkiye soobshcheniya po fizike
MiTOM	-	Metallovedeniye i termicheskaya obrabotka materialov
NM	-	Akademiya nauk SSR. Izvestiya. Neorganicheskiye materialy
NTO SSSR	-	Nauchno-tekhnicheskiye obshchestva SSSR
OiS	-	Optika i spektroskopiya
OMP	-	Optiko-mekhanicheskaya promyshlennost'
Otkr izobr	-	Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki
PSS	-	Physica Status Solidi
PTE	-	Pribory i tekhnika eksperimenta
RiE	-	Radiotekhnika i elektronika
RZhF	-	Referativnyy zhurnal. Fizika
RZhGeod	-	Referativnyy zhurnal. Geodeziya i aeros'yemka
RZhKh	-	Referativnyy zhurnal. Khimiya
RZhMetrolog	-	Referativnyy zhurnal. Metrologiya i izmeritel'naya tekhnika
RZhRadiot	-	Referativnyy zhurnal. Radiotekhnika
Sb 1	-	Sbornik. Materialy I Respublikskoy konferentsii molodykh uchenykh. Institut fizikoy AN BSSR, 1970. Sektsiya fiziki. Minsk, 1970.
TKiT	-	Tekhnika kino i televideniya

TVT	-	Teplofizika vysokikh temperatur
UFN	-	Uspekhi fizicheskikh nauk
UFZh	-	Ukrainskiy fizicheskiy zhurnal
VAN	-	Akademiya nauk SSSR. Vestnik
VDNKh SSSR	-	Informatsionnyy byulleten' VDNKh SSSR
VLU	-	Leningradskiy universitet. Vestnik. Fizika, khimiya
VMU	-	Moskovskiy universitet. Vestnik. Seriya fizika, astronomiya
ZhETF	-	Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhETF P	-	Pis'ma v zhurnal eksperimental'noy i teoreticheskoy fiziki
Zh NtP Fik	-	Zhurnal nauchnoy i prikladnoy fotografii i kinematografii
ZhPK	-	Zhurnal prikladnoy khimii
ZhPMTF	-	Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki
ZhPS	-	Zhurnal prikladnoy spektroskopii
ZhTF	-	Zhurnal tekhnicheskoy fiziki

## V. AUTHOR INDEX

### A

Abagyan, S. A. 37  
Abakumov, G. A. 18  
Abalakin, V. S. 21, 61  
Adrianova, I. I. 30, 32, 67  
Afanas'yev, A. A. 29  
Afanas'yev, Yu. V. 16  
Agabekyan, A. S. 73  
Agranat, M. B. 66  
Akerman, D. 4  
Akhmanov, S. A. 34  
Akhmetov, A. T. 48  
Akimova, G. N. 57  
Aksel'rod, A. A. 57  
Aksenchikov, A. P. 55, 57  
Aksenov, V. V. 71  
Aleksandrov, A. P. 34  
Aleksandrov, A. S. 5  
Aleksandrov, V. I. 10  
Alekseyev, A. V. 33  
Aleshin, I. V. 66  
Alfyorov, Zh. I. 4, 25  
Al'tshuler, S. A. 37  
Amosov, V. I. 37  
Anan'yev, Yu. A. 6  
Anashin, A. M. 60  
Andreyev, V. M. 4  
Andreyev, Yu. V. 1  
Andreyeva, N. V. 25  
Andreyeva, O. V. 55  
Andreyeva, T. L. 16  
Andronova, I. A. 14  
Angelova, N. V. 60  
Anikina, Ye. B. 1  
Antonov, Ye. V. 2  
Arbuzova, V. A. 38  
Arifov, U. A. 65

Aristov, V. V. 55  
Arkad'yev, D. I. 49  
Arkhipov, V. K. 10  
Arpishkin, V. M. 59  
Arsen'yev, A. A. 73  
Arsen'yev, V. V. 67  
Artamonov, V. G. 48  
Artem'yev, A. V. 51  
Arutyunov, G. K. 54  
Ashcheulov, Yu. V. 55  
Askar'yan, G. A. 30, 33, 51, 69  
Asnis, L. N. 30  
Avaliani, D. I. 48  
Aver'yanov, I. S. 25  
Avferonok, E. I. 33  
Ayerov, V. Ye. 52

### B

Babenko, V. A. 5  
Babiychuk, I. P. 37  
Badikov, V. V. 33, 64  
Bagdasarov, Kh. S. 2  
Bakay, A. S. 34  
Bakhramov, S. A. 13  
Balyasnikov, N. M. 24  
Bankovskiy, A. S. 43  
Barabanenkov, Yu. N. 51  
Barancvskiy, I. V. 67  
Baratov, A. N. 17  
Barbanel', I. S. 23  
Barchukov, A. I. 12, 60  
Baroyev, T. R. 4, 37  
Baryshev, N. S. 25  
Bashkanskiy, E. G. 34  
Bashkirov, Sh. Sh. 37

- Basov, N. G. 9, 15, 16, 71  
 Bass, F. G. 69  
 Batsanov, S. S. 37  
 Batyrev, V. A. 8  
 Bazhenov, V. A. 47  
 Bekker, Ya. M. 54  
 Belenov, E. M. 15, 16  
 Belikova, T. P. 67  
 Bel'kova, Ye. V. 24  
 Belogorodskiy, B. A. 55  
 Belousova, I. M. 10  
 Belozerov, A. F. 55  
 Bel'skiy, A. M. 34  
 Bel'skiy, N. K. 2  
 Berdnikov, N. B. 22  
 Berezhnoy, A. A. 67  
 Berezkin, V. V. 28  
 Bershteyn, I. L. 14  
 Besspalov, M. S. 71  
 Besshaposhnikov, A. A. 61, 73  
 Betekova, A. K. 55  
 Beterov, I. M. 10  
 Bezdetnyy, N. M. 25  
 Blanaru, L. 19  
 Blazhin, V. D. 43  
 Blistanov, A. A. 32  
 Blokh, O. G. 31  
 Bobrinev, V. I. 57  
 Bochkareva, N. I. 25  
 Bodretsova, A. I. 20  
 Bogatyrev, V. I. 3  
 Bogdan, D. A. 61  
 Bogdankevich, O. V. 54  
 Bogdanov, S. V. 33  
 Bogdanov, V. L. 20, 33  
 Bogomolova, G. A. 2  
 Bokhonov, A. F. 1, 31  
 Boksha, O. N. 39  
 Bol'shov, V. N. 49  
 Bonch-Bruyevich, A. M. 7, 66  
 Bondarenko, M. D. 1  
 Borodulin, V. I. 4  
 Borshch, A. A. 67  
 Boyko, V. A. 71  
 Boytsov, V. F. 43  
 Bredikhin, V. I. 34  
 Briskina, Ch. M. 61  
 Britov, A. D. 4  
 Brodin, M. S. 4, 67  
 Brunne, M. 13  
 Bubnov, M. M. 5  
 Bubnov, V. A. 51  
 Bugay, A. A. 37  
 Bukatyy, V. I. 47, 51  
 Bunkin, F. V. 69, 71  
 Burakov, V. S. 1  
 Bushmakova, O. V. 47  
 Bushuk, B. A. 7  
 Butsko, N. I. 35  
 Butusov, M. M. 55  
 Buynov, G. N. 55  
 Buzanova, L. K. 25  
 Buzhinskiy, I. M. 5  
 Bykovskiy, V. F. 15, 20  
 Bykovskiy, Yu. A. 2, 3, 59, 61  
 Bystrova, L. V. 3
- C
- Chaplik, A. V. 43  
 Chashchin, S. P. 25  
 Chavchanidze, O. N. 67  
 Chavchanidze, V. V. 56, 57  
 Chayanova, E. A. 47  
 Chaykin, A. M. 16  
 Chebotayev, V. P. 10  
 Chechenina, A. P. 43, 59  
 Chekalin, S. V. 71  
 Chekalinskaya, Yu. I. 43, 59  
 Cheremukhin, A. M. 48  
 Cherkasov, Ye. M. 13, 14  
 Chernets, A. N. 33  
 Chernigovskiy, V. V. 20  
 Chernina, E. A. 37  
 Chernousov, N. P. 4  
 Chernov, Ye. A. 57

Chertov, V. G. 49, 52  
 Chetroiu, A. 19  
 Chetverushkin, B. N. 69  
 Chirkin, A. S. 28, 34, 59  
 Chirkov, L. Ye 32  
 Chisler, E. V. 11  
 Chistyakov, V. A. 37  
 Chistyy, I. L. 38  
 Chudakov, V. S. 34  
 Chugayev, V. N. 69, 72  
 Chugayevskiy, Yu. V. 34  
 Chuguy, Yu. V. 58  
 Chumachenko, A. A. 58  
 Chupina, M. S. 38  
 Churakov, V. V. 15

#### D

Damaskin, I. A. 37  
 Daniel', Ye. V. 21  
 Danileyko, M. V. 15  
 Danileyko, Yu. K. 34  
 Danilov, O. B. 10  
 Danilychev, V. A. 9  
 Daricek, T. 50  
 Daume, E. Ya. 60  
 Davydov, B. L. 28  
 Davydov, V. Yu. 11  
 Das'ko, A. D. 7  
 Degtyarenko, N. N. 59, 67  
 Demchenko, V. Ya. 55  
 Demidov, N. A. 61  
 Demidov, Yu. P. 3  
 Demin, V. S. 63  
 Denisyuk, Yu. N. 55, 56  
 Derkacheva, L. D. 28  
 Deryagin, V. N. 3  
 Deryugin, I. A. 10, 21, 29, 61  
 Dianov, Ye. M. 5  
 Dianova, V. A. 31, 32  
 Diatroptov, D. B. 35  
 Dirochka, A. I. 4  
 Divil'kovskiy, I. M. 21  
 Divlekeyev, M. I. 36, 64  
 Dmetriyev, V. G. 28

Dmitrenko, K. A. 4  
 Dmitriyev, V. B. 54  
 Dneprovskiy, V. S. 67  
 Dobrovinskaya, Ye. R. 37  
 Dobrokhotova, V. K. 20  
 Dobyryn, V. V. 56  
 Dodonov, A. F. 16  
 Dogadkin, A. B. 49  
 Dokhnovskiy, I. B. 42  
 Dolginov, L. M. 4  
 Dolgov, V. V. 61  
 Dolin, L. S. 47  
 Dombi, J. 59  
 Dontsov, Yu. P. 60  
 Dorofeyeva, V. B. 64  
 Dovgiy, Ya. O. 35  
 Dravnov, L. N. 37  
 Drozdetskiy, V. Ye. 61  
 Druzhinina, L. V. 4  
 Dubovets, V. G. 15  
 Dubrov, M. N. 56  
 Duda, V. M. 32  
 Dudkin, V. A. 17  
 Dudnik, Ye. F. 32  
 Dunayev, A. S. 25  
 Dunina, V. V. 28  
 Dushkov, I. I. 26  
 Dyachenko, A. A. 59  
 D'yachenko, V. G. 38  
 D'yakonov, M. I. 5  
 D'yakov, Yu. N. 61  
 D'yakov, Yu. Ye. 34  
 Dyubko, S. F. 14, 26  
 Dzhagarov, Yu. A. 54  
 Dzhakoniya, V. Ye. 58  
 Dzieciolowski, K. 73

#### E

Ebralidze, T. D. 57  
 Ellert, G. V. 8  
 El'sharnubi, M. A. 36  
 Enman, V. B. 50



F

Fabelinskiy, I. L. 33, 62  
Fadeyev, V. V. 18  
Fadina, V. P. 47  
Falin, M. L. 38  
Fannibo, A. K. 66  
Farkas, G. 43  
Favorin, V. N. 3, 39  
Faynshteyn, S. M. 30  
Fayzullov, F. S. 1, 30  
Fedorov, F. I. 35  
Fedorov, V. B. 54  
Fedosimov, A. I. 71  
Fedotov, Ya. A. 26  
Feoktistov, V. N. 21  
Ferdman, N. A. 37  
Filatova, Ye. I. 57  
Filimonov, V. S. 25  
Fomin, V. I. 64  
Fomin, V. V. 53  
Fotiadi, A. E. 10  
Fradkin, E. Ye. 15  
Fridrikhov, S. A. 10, 11, 12  
Frolov, V. 56  
Furman, Sh. A. 23

G

Galkin, G. N. 3  
Garashina, L. S. 38  
Garbuzov, D. Z. 4  
Gati, L. 59  
Gayduchenya, V. F. 32  
Gayevoj, G. M. 8  
Genkin, V. N. 34  
Georgiev, G. 11  
Gerasimov, V. A. 21  
Gerke, R. R. 56  
Gershman, V. 56  
Gertsenshteyn, F. E. 52  
Gezalov, M. A. 64

Gibin, I. S. 58  
Gintoft, R. I. 38  
Gisin, B. V. 31  
Gisin, M. A. 24  
Glebov, G. D. 38  
Gliberman, A. Ya. 25  
Glotov, V. G. 59  
Glowacki, A. 62  
Gnatovskiy, A. V. 1  
Gochelashvili, K. S. 47  
Godina, D. A. 23  
Godovikov, A. A. 33, 64  
Godzinski, Z. 10  
Gol'dfarb, V. M. 14  
Golger, A. L. 30  
Golodenko, N. N. 66  
Gololobov, V. M. 62  
Golovey, M. P. 35  
Golovin, V. A. 62  
Golovyanko, A. A. 32  
Golubkova, V. P. 62  
Goncharov, I. G. 2, 3, 21, 59, 61  
Goncharov, K. V. 28  
Goncharov, V. K. 65  
Goncharuk, I. N. 11  
Gorbunov, Ye. P. 60  
Gordeyev, V. Ye. 20  
Gordon, Ye. B. 39  
Gorelik, A. V. 15, 20  
Gorelik, V. S. 62  
Gorshkov, A. S. 62  
Gorshkov, V. A. 43  
Gorshkova, L. D. 43  
Grasyuk, A. Z. 29, 30  
Grechinskiy, D. A. 62  
Grechushnikov, B. N. 34  
Gribkov, V. A. 71  
Gribkovskiy, V. P. 3, 5, 39  
Grigor'yants, V. V. 61  
Grigor'yev, A. G. 54

Grigor'yev, V. M. 49  
 Grishchenko, L. V. 49  
 Gromov, V. V. 16  
 Gromov, Yu. N. 23  
 Grum-Grzhimaylo, S. V. 39  
 Gruzdeva, G. A. 26  
 Gruzinskiy, V. V. 11  
 Gulanyan, E. Kh. 57  
 Gulyayev, Yu. V. 35  
 Gulyayeva, A. S. 67  
 Gumilevskiy, A. A. 37  
 Gurevich, Yu. G. 67, 69  
 Gusev, N. A. 50  
 Gusev, O. B. 56  
 Gusev, V. D. 47  
 Guseva, I. N. 2  
 Gutner, A. B. 21

## H

Hamal, K. 50  
 Havlicek, V. 38

## I

Iglitsyn, M. I. 64  
 Ignatkina, R. S. 3  
 Ignatov, A. B. 56  
 Ignat'yeva, O. S. 46  
 Igol'nikova, L. M. 23  
 Igoshin, V. I. 17  
 Il'ich, G. K. 52  
 Il'inskiy, Yu. A. 36, 64  
 Imas, Ya. A. 66  
 Ingarden, R. S. 43  
 Isayenko, V. I. 41  
 Istomin, A. N. 25  
 Ivakin, Ye. V. 58  
 Ivanov, A. O. 42  
 Ivanov, D. P. 60  
 Ivanov, G. A. 37  
 Ivanov, S. 8  
 Ivanov, V. D. 1  
 Ivanova, V. G. 23  
 Ivoylov, N. G. 37  
 Izmest'yev, A. A. 15  
 Izrailenko, A. N. 32

## J

Janossy, M. 43  
 Janossy, L. 43

## K

Kabalov, V. K. 27  
 Kabashnikov, V. P. 14  
 Kabayev, N. I. 12  
 Kaczmarek, F. 62  
 Kadyshevich, Ye. A. 48  
 Kakichashvili, Sh. D. 56  
 Kalestynski, A. 56  
 Kalinkina, I. N. 35  
 Kalmykov, A. A. 66  
 Kalosna, I. I. 8  
 Kamenskiy, N. N. 25  
 Kaminskiy, A. A. 2, 6, 20  
 Kamirowskiy, A. 60  
 Kamuz, A. M. 67  
 Kapralova, G. A. 16  
 Kapustin, A. A. 52  
 Karamyan, A. A. 35  
 Karczewski, B. 57  
 Karizhenskiy, Ye. Ya. 50  
 Karlov, N. V. 26, 43, 69  
 Karnaukh, N. P. 9  
 Karpov, L. P. 23  
 Karpushko, F. V. 19  
 Kartashev, A. I. 73  
 Kartavov, S. A. 65  
 Kaslin, V. M. 13  
 Katayev, A. G. 3  
 Kats, M. L. 19  
 Katsev, I. L. 47, 52  
 Katsman, V. I. 22  
 Kayper, A. 4  
 Kayumova, Z. A. 65  
 Kazachenko, L. P. 9  
 Kazakov, A. L. 35  
 Kazakov, V. P. 37  
 Kazanskiy, V. V. 65  
 Kechkemeti, I. 7  
 Ketskemety, I. 59  
 Keydan, V. F. 13  
 Khadikov, M. K. 37  
 Khaimov-Mal'kov, V. Ya. 34  
 Khanin, Ya. I. 44

Khapalyuk, A. P. 34, 53  
 Kharakhorin, F. F. 3  
 Kharchenko, L. T. 64  
 Kharitonenko, A. A. 50, 51  
 Kharitonov, V. V. 57  
 Kharitonov, Yu. Ya. 44  
 Khar'kov, V. P. 23  
 Khasanov, A. Kh. 37  
 Khashkhozhev, Z. M. 33  
 Khattatov, V. U. 67  
 Khaykin, N. Sh. 23, 49  
 Khaykin, V. L. 49  
 Khayutin, L. M. 15  
 Kheyfets, Ye. I. 55  
 Khizhnyak, A. I. 24, 45, 60  
 Khmelevtsov, S. S. 47  
 Khodovoy, V. A. 7  
 Khokhlov, R. V. 18  
 Kholodilov, A. A. 66  
 Kholodnykh, A. I. 59  
 Khomaza, V. F. 50  
 Khripchenko, I. A. 57  
 Khromov, V. V. 7  
 Khun, E. 7  
 Kichigin, D. A. 37  
 Kielich, S. 28  
 Kircheva, P. P. 30  
 Kirillov, N. N. 57  
 Kirillova, N. N. 20  
 Kiselev, A. A. 3  
 Kitayeva, V. F. 38  
 Klavdiyev, V. V. 71  
 Klejman, H. 14, 73  
 Klement'yeva, A. Yu. 23  
 Klepaczko, J. 62  
 Klimov, I. M. 31  
 Klinkov, V. K. 1  
 Klochkov, V. P. 20  
 Klyatskin, V. I. 52  
 Klyukanova, N. A. 44  
 Klyukin, I. I. 33  
 Klyushin, Ye. B. 47  
 Knyazev, I. N. 13, 71  
 Kobets, L. I. 37  
 Koblova, M. M. 22, 57

Kobyzhev, V. N. 4  
 Kochelayev, B. I. 37  
 Kodes, J. 67  
 Kokodiy, N. G. 66  
 Kokurin, Yu. L. 49  
 Kolobkov, V. P. 38  
 Kolodziejczak, J. 35  
 Kolosovskiy, K. K. 64  
 Kolovandin, B. A. 52  
 Kolpakova, I. V. 21  
 Kolpakova, N. N. 34  
 Komissarov, B. M. 69  
 Komissarova, I. I. 56  
 Komlev, A. A. 55  
 Komolov, V. L. 66  
 Kondaurov, N. M. 26  
 Kondurova, L. N. 57  
 Konev, Yu. B. 12, 60  
 Kononenko, V. K. 3  
 Konovalova, S. A. 22, 54  
 Konstantinov, V. B. 56  
 Kontsevoy, Yu. A. 62  
 Konyayeva, N. P. 62  
 Kopvillem, U. Kh. 33  
 Kopylov, P. M. 58  
 Kopytin, Yu. D. 51  
 Koreneva, L. G. 28  
 Korobeynikova, V. N. 37  
 Korolenko, P. V. 19  
 Korolev, F. A. 13, 23, 29  
 Korolev, Yu. G. 32  
 Korolyshin, V. N. 35  
 Koronkevich, V. P. 58, 62  
 Kortenski, T. 8  
 Korzun, M. 62  
 Kosaganova, M. G. 64  
 Koshelev, Ye. L. 16  
 Kosourov, G. I. 35  
 Kostinskaya, T. A. 3  
 Kostko, O. K. 47  
 Kostryukov, V. V. 21  
 Kostyuk, A. A. 57  
 Kosyrev, Y. 63  
 Kotlyarova, I. B. 53  
 Kotomtseva, L. A. 44

Kotosonov, M. V. 57  
 Kovalenko, P. A. 26  
 Kovalenko, V. S. 65  
 Kovalenko, Ye. S. 21  
 Kovalev, A. S. 44  
 Kovalev, I. F. 38  
 Kovalevskiy, D. V. 21  
 Kovalevskiy, V. G. 49  
 Kovarskiy, V. A. 35, 37  
 Kovrigin, A. I. 29, 59  
 Kozhan, T. M. 8  
 Kozina, G. S. 3  
 Kozlov, V. D. 52  
 Kozma, L. 7  
 Kozyrev, Yu. P. 59  
 Krasavin, I. V. 4  
 Krasovitskiy, V. B. 44  
 Krasyyuk, B. A. 3, 67  
 Krasyyuk, I. K. 66, 71  
 Kravtsov, L. A. 39  
 Krayevskiy, S. L. 8  
 Krayskiy, A. V. 58  
 Kremenchugskiy, L. S. 26  
 Krivchikova, E. P. 63  
 Krokhnin, O. N. 71  
 Kromskiy, G. I. 18  
 Krupitskiy, E. I. 23  
 Krylov, K. I. 44  
 Krylov, Yu. K. 65  
 Krylova, T. N. 24  
 Krynetskiy, B. B. 26  
 Kryukov, P. G. 71  
 Kucherenko, Ye. T. 10, 21  
 Kuchuberiya, I. Kh. 61, 73  
 Kudryavtsev, Ye. N. 62  
 Kudryavtseva, A. D. 29  
 Kukhmistrov, V. S. 20  
 Kuklev, Yu. I. 35  
 Kuksenko, V. S. 64  
 Kukushkin, V. A. 11  
 Kuleshov, P. P. 64  
 Kulikova, N. P. 65

Kulikova, T. A. 20  
 Kulikovskiy, B. N. 9  
 Kulyapin, V. M. 69  
 Kuprishov, V. F. 1  
 Kurashov, V. N. 29  
 Kurbatov, L. N. 3, 4  
 Kurgayeva, N. Ye. 3  
 Kurochkin, A. P. 31  
 Kushtanin, K. I. 57  
 Kutateladze, S. S. 48  
 Kutsak, A. A. 15  
 Kuvshinskiy, N. G. 57  
 Kuzilin, Yu. Ye. 55  
 Kuzin, B. G. 65  
 Kuz'min, G. P. 69  
 Kuznetsov, Yu. A. 60  
 Kuznetsova, S. V. 16  
 Kuznetsova, T. I. 58

# L

Lagutin, A. G. 64  
 Landa, P. S. 63  
 Larionov, N. P. 55  
 Lavrent'yeva, L. G. 27  
 Lavrovskaya, G. K. 16  
 Le Van Tien, 65  
 Lebedeva, N. N. 25  
 Ledneva, G. P. 19  
 Lemanov, V. V. 33  
 Leontovich, A. M. 1  
 Letokhov, V. S. 12, 63  
 Levikov, S. I. 20  
 Levina, M. D. 23  
 Levitan, D. B. 61  
 Levshin, L. V. 38  
 Leykin, A. Ya. 60  
 Leypunskiy, I. O. 16  
 Libov, L. D. 4  
 Lipatov, A. S. 32  
 Lisin, A. S. 25  
 Lisitsyn, V. N. 10

Litvak, A. G. 71, 72  
 Lobskiy, M. I. 31  
 Logachev, V. A. 61  
 Lopina, S. V. 20  
 Los', Ye. V. 21  
 Loyko, M. M. 7, 19  
 Lugovskoy, V. B. 65  
 Lukevits, E. Ya. 38  
 Lukin, A. V. 55  
 Lun'kin, S. P. 24  
 Lyakhovich, A. K. 39  
 Lysenko, S. Ye. 60  
 Lyubimov, V. V. 20  
 Lyubovtseva, Yu. S. 48

# M

Magdich, L. N. 11  
 Makeyev, V. I. 17  
 Mak, A. A. 5  
 Makarov, A. I. 60  
 Makarov, N. I. 69  
 Makhanev, A. G. 38  
 Maksimenko, V. M. 37  
 Malaczynski, G. 13  
 Malakhov, A. N. 44  
 Maloch, J. 67  
 Malysh, A. G. 34  
 Malyshev, B. N. 9  
 Malyshev, V. I. 5, 17  
 Malyshev, Yu. M. 63  
 Malyutin, A. A. 63  
 Manakov, N. D. 36  
 Mandel'shtam, S. L. 63  
 Manenkov, A. A. 34  
 Man'ko, M. A. 4  
 Mansurov, I. Ya. 62  
 Manuylova, T. P. 26  
 Manykin, E. A. 45  
 Marasin, L. Ye. 3  
 Marchenko, V. F. 62  
 Marchenko, V. M. 71  
 Margolina, Ye. M. 16

Marikhin, V. A. 64  
 Markin, Ye. P. 16, 17  
 Markina, N. P. 25  
 Markova, S. V. 14  
 Markovskiy, V. Yu. 32  
 Markus, F. A. 48, 57  
 Markushev, V. M. 61  
 Martynenko, O. G. 51, 52  
 Mashchenko, A. I. 29  
 Mashkevich, V. S. 69  
 Maslennikov, A. S. 50  
 Maslov, A. I. 16  
 Maslov, V. A. 2, 3, 59, 61  
 Maslov, V. N. 67  
 Matveyev, R. F. 49  
 Matveyev, Yu. S. 20  
 Mayer, M. 35  
 Mayev, R. G. 5  
 Mazan'ko, I. P. 11  
 Medvedev, B. A. 17  
 Men', A. A. 69  
 Mergelyan, O. S. 24  
 Meshcheryakova, T. F. 23  
 Meskin, S. S. 3  
 Mikaelyan, A. L. 1, 22, 57  
 Mikhalev, Yu. N. 26  
 Mikhalevich, V. G. 30, 51  
 Mikhalevskiy, V. S. 13  
 Milewski, J. 13  
 Milinkis, B. 50  
 Milinkis, B. M. 49  
 Minayev, V. P. 1  
 Mindlin, I. G. 49  
 Min'ko, L. Ya. 65  
 Miroshnikov, M. M. 50  
 Mirovskaya, Ye. A. 29  
 Mirzayev, A. T. 10  
 Misezhnikov, G. S. 63  
 Mishin, V. A. 26  
 Miteva, M. 8  
 Mitrofanov, A. S. 21  
 Mitrofanov, Yu. F. 33  
 Mityugov, V. V. 34

Mkryan, T. G. 17  
 Mochalkin, N. N. 4  
 Moiseyenko, G. I. 5  
 Molchanov, M. I. 11  
 Moroz, Ye. G. 35  
 Morozov, I. I. 16  
 Morozov, Ye. P. 4  
 Moshayskiy, V. N. 31  
 Movsesyan, M. Ye. 29  
 Moysa, M. I. 65  
 Moyya, A. M. 11, 31, 32  
 Mroz, A. 10  
 Mukhamedgaliyeva, A. F. 11  
 Mukhamedova, D. A. 2  
 Mukhina, M. M. 63  
 Mulikov, V. F. 29  
 Mumladze, V. V. 57  
 Muratov, V. R. 59  
 Murina, T. M. 68  
 Murzin, L. 64  
 Musatov, M. I. 42  
 Mushinskiy, A. A. 71  
 Mustafin, K. S. 55, 58  
 Mustel', Ye. R. 31  
 Mykityuk, V. I. 63

## N

Naboykin, Yu. V. 20  
 Nagibarov, V. R. 44  
 Nagulina, R. A. 24  
 Nakhodkin, N. G. 57  
 Nalbandov, L. V. 20  
 Nalbandyan, A. B. 17  
 Naprstek, Z. 46  
 Nasibov, A. S. 54  
 Naumenko, Ye. K. 53  
 Naumov, S. M. 57  
 Navara, P. 50  
 Naydenov, Kh. 63  
 Nechitaylo, V. S. 34  
 Nedel'skiy, N. F. 3  
 Neporent, B. S. 7, 20

Nesterenko, T. M. 34  
 Nesterova, Z. V. 31  
 Nestrizhenko, Yu. A. 34  
 Nezhevenko, Ye. S. 58  
 Nikitin, V. V. 2, 15, 59, 61  
 Nikles, P. V. 29  
 Nikulin, V. Ya. 71  
 Ninoyan, Zh. O. 29  
 Ninua, O. A. 25  
 Nitsiyevskiy, E. S. 28  
 Nizamov, N. 38  
 Norinskiy, L. V. 72  
 Novak, P. 38  
 Novgorodov, M. Z. 13  
 Novik, A. Ye. 62  
 Novikov, A. A. 54  
 Novikov, M. A. 60  
 Novikov, N. P. 66  
 Novotny, A. 50

## O

Odinev, N. N. 50  
 Odintsov, V. I. 13, 29  
 Oganesyanyan, K. T. 17  
 Ogurok, N. -D. D. 11  
 Okunevich, A. I. 21  
 Olovyyagin, B. R. 68  
 Onoshko, R. N. 17  
 Orayevskiy, A. N. 16, 17  
 Orekhova, V. P. 39  
 Orlov, V. M. 47  
 Orlova, I. B. 20  
 Osiko, V. V. 39  
 Ostapchenko, Ye. P. 20  
 Ostrovskaya, G. V. 56  
 Ostrovskiy, Yu. I. 58  
 Otradinskaya, N. V. 61  
 Ovchinnikov, A. A. 45  
 Ovchinnikov, V. M. 31  
 Ovechkin, A. P. 19  
 Ozolin, L. A. 38

P

Pacheva, J. 11  
Pak, G. T. 4  
Paltarak, N. M. 8  
Panasyuk, L. M. 26  
Panfilova, L. I. 39  
Pankratov, A. V. 17  
Pankratov, V. M. 31, 32  
Panov, Ye. I. 10  
Paramonova, N. A. 9  
Paritskiy, L. G. 25  
Pariyskaya, A. V. 17  
Parshin, P. F. 58  
Parygin, V. N. 31, 32  
Pashinin, P. P. 41, 71, 72  
Pashkovich, L. N. 32  
Pastor, A. A. 72  
Paszkowska, H. 10  
Pavlenko, A. M. 33  
Pavlik, B. D. 12  
Pavlov, V. G. 60  
Peacock, N. J. 60  
Pechenov, A. N. 54  
Pelinovskiy, Ye. N. 53  
Pen'kovskiy, A. I. 59  
Perchanok, T. M. 11  
Peregudov, G. V. 30  
Perel', V. I. 5  
Perlin, Ye. Yu. 35  
Perminov, V. P. 66  
Persikov, M. V. 59  
Petrash, G. G. 13, 14  
Petrov, A. A. 63  
Petrov, A. I. 4  
Petrov, R. P. 26  
Petrova, A. V. 30  
Petrova, T. V. 31  
Petrovskaya, M. P. 65  
Petrovskiy, G. T. 38  
Petukhova, T. M. 65

Pikok, N. D. 60  
Pirogov, Yu. A. 31  
Pirozhkov, V. A. 33, 44  
Pisarev, R. V. 33, 34  
Plakhina, I. N. 48  
Plaksiy, Yu. S. 60  
Plekhotkin, G. A. 72  
Plyatsko, G. V. 65  
Podgayetskiy, V. M. 21  
Podmoshenskiy, I. V. 43  
Podvigalkina, G. Ya. 24  
Pogosyan, V. A. 69  
Pol'skiy, Yu. Ye. 38  
Poltavtsev, Yu. G. 69  
Poluektov, I. A. 5, 16  
Polyanskiy, V. K. 53  
Ponomarev, A. N. 39  
Popkov, Yu. A. 64  
Popov, L. N. 32  
Popov, Yu. M. 9  
Popov, Yu. V. 30, 50, 67  
Popovich, M. M. 22  
Popovichev, V. I. 1, 30  
Portnoy, Ye. L. 4  
Pottosina, S. A. 51  
Preobrazhenskiy, N. G. 72  
Prichko, Yu. V. 25  
Prikhod'ko, L. I. 47  
Prishivalko, A. P. 15, 53  
Priyateleva, L. P. 2  
Prokhorov, A. M. 2, 5, 12, 60, 68, 71, 72  
Prokhorov, N. G. 23  
Prokhortseva, T. M. 2  
Promyslov, Ye. V. 65  
Protas, I. M. 72  
Protasevich, V. I. 58  
Protasov, I. I. 25  
Pryadein, V. A. 72  
Puks, R. A. 8

Pustovoyt, V. I. 5  
Pylinina, S. N. 61  
Pyshkin, S. L. 37

## R

Raab, Z. 4  
Rabinovich, M. I. 30  
Radautsian, S. I. 37  
Rafikov, R. A. 55  
Ragul'skiy, V. V. 1, 30  
Rakhel'kin, A. Z. 73  
Rakhshtadt, Yu. A. 2  
Ramazashvili, R. R. 72  
Ramishvili, N. M. 56, 57  
Rapoport, I. P. 36  
Raskutin, S. A. 50  
Ratner, A. M. 23  
Rats, B. 7  
Ravich, V. N. 3  
Razumova, T. K. 7  
Razumovskiy, V. N. 52  
Remezov, V. V. 26  
Rez, I. S. 32  
Reznichenko, V. Ya. 4  
Rezvyi, R. R. 62  
Rinkevichyus, B. S. 62  
Robinson, D. C. 60  
Robinson, D. Ch. 60  
Rogovoy, V. N. 26, 29  
Romanova, L. M. 53  
Rom-Krichevskaya, I. A. 20  
Rozenal', G. N. 66  
Rubanov, A. S. 20, 58  
Rubanova, G. M. 7  
Rubinshteyn, Ye. A. 67  
Rudnitskiy, Yu. P. 8  
Rumyantsev, V. N. 39  
Ruzanova, B. 58  
Rvachev, V. P. 47  
Rybakov, V. A. 1, 23, 31, 66  
Rybakov, V. V. 63  
Rygalin, V. G. 62  
Rykalin, N. N. 66, 69  
Ryskin, A. Ya. 40

Ryskin, V. S. 64  
Ryvkin, B. S. 67  
Ryvkin, S. M. 25  
Ryzhakova, E. L. 10  
Ryzhakova, S. I. 35  
Rzewuski, M. 73  
Rzhevskiy, V. N. 58

## S

Sabirov, L. M. 12  
Sabotinov, N. 11  
Safaryan, M. N. 69  
Sakun, V. P. 39  
Salma, I. 7  
Salyadinov, V. S. 66  
Samartsev, V. V. 44  
Samokhina, M. A. 28  
Samoylyukovich, V. A. 3  
Samson, A. M. 1, 31, 44  
Sandler, M. S. 44  
Sannikov, V. V. 60  
Sarkisov, L. A. 39  
Sarzhhevskiy, A. M. 8, 66  
Savatinova, I. T. 11  
Savchenko, V. G. 32  
Savel'yev, V. A. 47  
Savinkov, A. I. 32  
Savko, S. S. 23  
Saytkulov, I. G. 39  
Selivanenko, A. S. 43  
Sem, M. F. 13  
Semenova, T. A. 28  
Senatskiy, Yu. V. 71  
Senkevich, V. F. 65  
Serdyukov, A. N. 35  
Serebryakov, V. A. 41  
Sergeyev, O. A. 69  
Sergeyeva, A. I. 22  
Sevast'yanov, B. K. 39  
Shakhgedanov, V. N. 23  
Shakhidzhanov, S. S. 3  
Shakhnovskiy, A. L. 21  
Shakhtarin, V. N. 61  
Shakhverdov, T. A. 40  
Shakin, O. V. 33



Shanurin, Yu. Ye. 37  
 Shapiro, L. L. 56  
 Shapovalov, D. S. 16  
 Sharapova, T. A. 72  
 Sharif, G. A. 28  
 Sharlay, S. F. 2, 6  
 Sharonov, G. A. 33  
 Shaskol'skaya, M. P. 32  
 Shatkovskiy, Ye. V. 3  
 Shatrov, V. D. 39  
 Shchednova, A. K. 29  
 Shcheglov, V. A. 16  
 Shchelev, M. Ya. 71  
 Shcherbakov, I. A. 39  
 Shcherbakova, A. A. 1  
 Shchetinin, M. P. 25  
 Shekhtman, V. Sh. 55  
 Sheloput, D. V. 33  
 Shereshev, A. B. 56  
 Sherstobitov, V. Ye. 6  
 Shevchenko, I. V. 38  
 Shevchenko, V. I. 21, 61  
 Shevchenko, V. V. 34  
 Shevchenko, Yu. N. 20  
 Sheynis, N. V. 22  
 Sheynkman, M. K. 25  
 Shilin, B. V. 50  
 Shilov, A. Ye. 17  
 Shilov, V. B. 7  
 Shimchak, G. 35  
 Shipulo, G. P. 30, 51  
 Shkadarevich, A. P. 12  
 Shmakov, P. V. 58  
 Shorokhov, O. A. 6  
 Shteynshleyger, V. B. 63  
 Shuba, Yu. A. 24  
 Shushpanov, O. Ye. 59  
 Shvedova, N. D. 8  
 Shveykin, V. I. 4  
 Shvidkovskiy, Ye. G. 47  
 Shvindt, N. N. 21  
 Shvom, Ye. M. 28

Sidorova, Ye. A. 42  
 Silin, V. P. 70  
 Silin, V. V. 33  
 Sil'nov, S. M. 59  
 Simonov, A. P. 18  
 Simonova, N. V. 61, 73  
 Simonyan, L. V. 31  
 Sinenko, G. F. 46  
 Siniy, I. G. 34  
 Sinyakov, Ye. V. 32  
 Siukayev, N. V. 4, 37  
 Sizov, V. N. 41  
 Skavronskiy, V. N. 50  
 Sklizkov, G. V. 71  
 Sklyarenko, S. K. 26  
 Skorobogatov, G. A. 17  
 Skrotskiy, G. V. 15  
 Skvorchevskiy, A. K. 65  
 Skvortsova, G. V. 63  
 Slutsker, A. I. 64  
 Slyusarev, S. G. 43  
 Smirnov, A. I. 57  
 Smirnov, A. Ya. 12, 24  
 Smirnov, B. M. 13  
 Smirnov, D. F. 36  
 Smirnov, V. L. 3, 59  
 Smirnov, Ye. P. 55  
 Smolin, Yu. Z. 66  
 Smolinska, B. 56  
 Smolkin, N. M. 22  
 Smolyar, T. Ya. 22  
 Sobel'man, I. I. 16  
 Sobolev, B. P. 38  
 Sobolev, N. N. 13, 14  
 Sofronov, Yu. 64  
 Sokolov, V. V. 48  
 Sokolova, R. S. 24  
 Sokolova, Ye. Yu. 29  
 Sokolovskaya, A. I. 29  
 Sokolovskiy, R. I. 15, 44  
 Sokovikov, V. V. 14  
 Sollogub, V. S. 27

Solomatin, V. S. 36, 64  
 Solomko, A. A. 63  
 Soloukhin, R. I. 64, 72  
 Solov'yev, V. S. 60  
 Solov'yeva, G. I. 11  
 Soluyanov, Yu. 56  
 Somov, V. G. 32  
 Soms, L. N. 5  
 Sonin, A. S. 32  
 Sorokin, V. N. 16  
 Sorokin, Yu. M. 72  
 Soroko-Novitskiy, N. V. 4  
 Soskin, M. S. 1, 44  
 Spesanskiy, K. Ye. 50  
 Spornik, N. M. 55  
 Stabnikov, M. V. 58  
 Stanko, J. 13  
 Stankowski, J. 44  
 Starikov, A. D. 41  
 Starostin, S. G. 63  
 Starunov, V. S. 30  
 Stasel'ko, D. I. 56  
 Stepanov, A. I. 5  
 Stepanov, B. I. 8, 9, 15, 58  
 Stepanov, N. S. 72  
 Stepanov, Yu. A. 40  
 Stolonov, A. L. 39  
 Stolyarov, A. K. 23, 57  
 Stratskevich, L. K. 11  
 Strelkov, V. S. 60  
 Strezhnev, S. A. 24  
 Strizhnev, V. S. 7  
 Subbotin, A. K. 63  
 Sudakov, A. B. 5  
 Sugakov, V. I. 5  
 Sukhanov, V. I. 55  
 Sukhonov, Ya. 64  
 Sukhorukikh, V. S. 60  
 Sukhorukov, A. P. 29  
 Sukhov, Ye. G. 5  
 Suminov, V. M. 65  
 Supalov, V. A. 26  
 Sushchinskiy, M. M. 29, 30, 62

Svetsitskaya, N. A. 6  
 Sverdlov, L. M. 8  
 Svich, V. A. 14  
 Sviridenkov, E. A. 67  
 Sviridov, A. G. 13  
 Sviridov, M. V. 11  
 Sviridova, O. A. 57  
 Sychev, A. A. 5  
 Syngayevskaya, V. A. 46  
 Sysoyev, L. A. 39  
 Szalma, I. 59

# T

Tachkov, A. N. 58  
 Tager, A. S. 4  
 Talanov, V. I. 24, 45  
 Tal'roze, V. L. 16, 39  
 Tarasov, R. P. 10  
 Tatarenkov, V. M. 11, 63  
 Tatarskiy, V. I. 52, 53  
 Terekhin, D. K. 12  
 Terent'yev, V. Ye. 30  
 Terin, V. S. 60  
 Terpugov, A. F. 50, 51  
 Teytel'boym, M. A. 17  
 Tezlevan, V. Ye. 37  
 Timchenko, A. I. 33  
 Timofeyev, A. F. 52  
 Timofeyeva, V. A. 42, 49  
 Titov, A. N. 11, 63  
 Titova, L. V. 67  
 Tolkachev, V. A. 8  
 Tombak, M. Sh. 58  
 Tomov, I. V. 28, 35  
 Torgovichev, V. A. 47  
 Toropkov, N. A. 73  
 Toropova, G. G. 59  
 Trakhtengerts, V. Yu. 71  
 Travin, G. A. 51  
 Trofim, V. G. 25  
 Troitskiy, V. I. 31  
 Troitskiy, Yu. V. 19

Trokhan, A. M. 64  
 Troneva, N. V. 67  
 Tron'ko, V. O. 60  
 Troshin, A. S. 36  
 Trukhanenko, E. M. 39  
 Tsarenkov, B. V. 3  
 Tselykovskiy, A. F. 62  
 Tsibulya, A. B. 53  
 Tsoy, V. I. 19  
 Tsvetkov, V. V. 54  
 Tunitskiy, L. N. 13, 14  
 Tunkin, V. G. 59  
 Tupenevich, P. A. 39  
 Turkevich, Yu. G. 55, 66  
 Turkov, Yu. G. 1  
 Tverdokhle, P. Ye. 58  
 Tvorogov, S. D. 48, 53  
 Tychinskiy, V. P. 23  
 Tyurin, Ye. L. 71  
 Tyutin, M. S. 38

# U

Uglanova, V. V. 39  
 Uglov, A. A. 66, 69  
 Umarov, B. S. 39  
 Uroshevich, V. V. 22  
 Ushanov, S. N. 63  
 Uspenskiy, A. V. 11  
 Ustanov, R. G. 33  
 Utenkov, B. I. 50  
 Uvarov, Ye. F. 26  
 Uzkiy, A. F. 3

# V

Vaganov, A. B. 35  
 Valeyev, A. S. 61  
 Validov, M. A. 24  
 Valishev, R. M. 37  
 Valitov, R. A. 66  
 Valitova, N. R. 28

Valov, P. M. 67  
 Vanyukov, A. V. 26  
 Vanyukov, M. P. 41  
 Varaksin, V. P. 48  
 Varshavskiy, Yu. S. 44  
 Vasileva, M. 51  
 Vasilevskaya, A. S. 32  
 Vasiliu, V. 19  
 Vasil'yev, Ya. T. 67  
 Vasil'yeva, N. N. 19  
 Vasil'yeva, N. V. 57  
 Vedeneyev, V. I. 17  
 Vedeshin, L. A. 49  
 Velichanskiy, V. L. 2, 3, 59, 61  
 Velichko, A. G. 19  
 Verevkin, Yu. K. 60  
 Vetchinkin, S. I. 45  
 Veynberg, T. I. 24  
 Vichr, M. 38  
 Vinevich, B. S. 13  
 Vinogradov, V. I. 12  
 Vitkin, E. I. 20  
 Vize, L. 59  
 Vlasov, A. N. 4  
 Vlasov, S. N. 24, 45  
 Vlasov, Yu. N. 64  
 Vlasova, T. G. 48  
 Vodop'yanov, L. K. 39  
 Volkonskiy, V. B. 32  
 Volkov, A. M. 15  
 Volkov, S. A. 65  
 Volkova, G. A. 22  
 Volkova, Ye. A. 20  
 Volkova, Ye. N. 32  
 Volpyanskiy, A. Ye. 64  
 Vorobeychikov, E. S. 32  
 Vorob'yev, V. V. 48  
 Voron'ko, Yu. K. 2  
 Voronin, E. S. 36, 64  
 Voronin, V. F. 3  
 Voronkov, M. G. 38  
 Voropay, Ye. S. 8, 66

Voskoboynik, G. A. 58  
 Voyshvillo, N. A. 25  
 Voytovich, A. P. 12, 24  
 Vrbova', M. 45  
 Vul', V. A. 22, 54  
 Vulchev, D. 8  
 Vylegzhanin, D. N. 6  
 Vysotskiy, V. Z. 65

### W

Warczewski, Z. 62  
 Wolinski, W. 14, 60

### Y

Yablonskiy, G. P. 39  
 Yakobi, Yu. A. 64, 72  
 Yakovlev, Yu. M. 34  
 Yampol'skiy, P. A. 66  
 Yanayt, Yu. A. 18  
 Yanina, G. M. 62  
 Yaroshetskiy, I. D. 67  
 Yashumov, I. V. 4  
 Yassiyevich, I. N. 67  
 Yatsevich, G. B. 52  
 Yefimenko, M. N. 26  
 Yegorov, V. S. 72  
 Yeleonskiy, V. M. 70  
 Yelesin, V. F. 5, 59, 67  
 Yeletski, A. V. 12, 13  
 Yeliseyev, P. G. 4, 5, 37  
 Yemel'yanov, V. P. 53  
 Yeremin, B. G. 72  
 Yeremin, M. V. 40  
 Yeremin, V. I. 72  
 Yermolayev, G. 64  
 Yermolayev, V. L. 40  
 Yeroshenko, V. M. 71  
 Yershov, A. G. 28  
 Yershov, Ye. I. 10  
 Yudin, Yu. I. 66  
 Yufis, N. A. 38  
 Yurist, B. V. 49  
 Yushin, N. K. 33

### Z

Zabelyshenskiy, V. I. 64  
 Zakharchenya, B. P. 40  
 Zakharov, I. S. 27  
 Zakharov, M. I. 19  
 Zakharov, S. D. 71  
 Zakharov, S. M. 45, 71  
 Zakharov, V. M. 47  
 Zakharov, V. P. 27, 69, 72  
 Zamkov, V. A. 20, 48  
 Zapryagayev, A. F. 10  
 Zasovin, E. A. 22, 57  
 Zatserkovnyuk, N. M. 72  
 Zavenyagin, Yu. A. 60  
 Zaytsev, I. F. 22  
 Zaytsev, V. K. 31  
 Zaytsev, V. P. 12  
 Zege, E. P. 47  
 Zel'dovich, Ya. B. 45  
 Zelikman, V. L. 57  
 Zemlyachev, Ye. Z. 32  
 Zeynally, A. Kh. 25  
 Zeytunyan, G. A. 73  
 Zhabotinskiy, M. Ye. 8, 28, 61  
 Zhashkov, A. A. 32  
 Zhebel', B. G. 58  
 Zheltov, G. I. 20  
 Zhilkin, A. M. 52  
 Zhirovetskiy, V. M. 65  
 Zhiryakov, B. M. 66  
 Zhitnikov, R. A. 21, 64  
 Zhokhov, V. P. 46  
 Zhukov, V. I. 61  
 Zil'berman, P. Ye. 35  
 Zimin, E. S. 55  
 Zimokosov, G. A. 60  
 Zolin, V. F. 28  
 Zon, B. A. 36  
 Zubarev, I. G. 29  
 Zubov, B. V. 68  
 Zubov, V. A. 30, 58  
 Zubrinov, I. I. 33  
 Zudkov, P. I. 28

Zukakishvili, G. G. 61

Zuyev, A. L. 32

Zuyev, V. Ye. 48

Zverev, V. A. 33

Zykova, Ye. V. 10